

# SEMI-LEXICAL HEADS IN CZECH MODAL STRUCTURES

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## **Semi-lexical heads in Czech modal structures**

This thesis argues for a semi-lexical interpretation of Czech modal verbs. It demonstrates that Czech modals participate in syntactic structures that contain a finite verb followed by multiple infinitives (verb clusters), such as *Jan musel chtít začít studovat lingvistiku* ‘John had to want to begin studying linguistics.’ The term Complex Verbal Domain (CVD) is devised for the verbal part of these structures. The analysis seeks to offer a unified account of modal verbs in Czech in respect of their subcategorization frame in the Lexicon and semantic properties (‘modal meaning’). It also attempts to clarify the confusion regarding modal verbs and modality in traditional Czech grammars by shifting the attention from pragmatics to an approach based on recent development of generative syntax (Chomsky 1998, 2000, 2001).

Following the examination of syntactic behaviour of Czech modals in the CVD structure, the thesis proceeds to modify Emonds’ (1985, 2000) theory of semi-lexicality. This approach assumes that Czech modals are neither fully functional (due to properties such as rich morphological paradigm, ability to undergo Negation, Reflexivization and PF movement), nor fully lexical (they are unable to take clausal complements and distinguish between aspectual pairs).

The semi-lexical analysis also shows that there is evidence for the existence of two types of Czech modals, True modal verbs (TMVs) and Optional modal verbs (OMVs). Whilst the former cannot nominalize or denote events, but are able to convey epistemic meaning, the latter undergo nominalization and are capable of event denotation, but do not attain epistemic reading. The semi-lexical properties of both TMVs and OMVs are syntactically reflected in their specific subcategorization frame

$X, +MODAL, +mod, +\_ [V, INF]$ . The cognitive syntactic feature +MODAL co-specifies the syntactic derivation of Czech modal verbs in the ‘light’  $v^o$ , which takes an infinitival VP as a complement. Therefore, I argue that the CVD is syntactically  $vP$ . If the original CVD structure involves multiple infinitives (*Jan*  $_{vP}musí$   $_{vP}chtít(INF)$  *začít(INF)* *číst(INF)* *tu knihu* ‘John has to want to begin reading that book’), the VP complement has characteristics of a flat structure, adapted from Emonds (1999a, 1999b, 2001). On the other hand, +mod is a semantic feature that specifies the lexical behaviour of Czech modals and conveys the ‘modal meaning’, which is formalized in terms of possible worlds semantics as quantification over the modal base.

The semi-lexical analysis also investigates the root  $v$ . epistemic dichotomy. The thesis argues that this dichotomy does not affect the unified theory of modality in Czech in terms of its derivational and semantic status, but is a result of covert processes at the level of Logical Form (LF), which realize different levels of modal quantification.

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## Chapter 1

### *Introduction*

### 1.1. Large verb structures in Czech and infinitival complementation

It is a well known fact that the verbal domain in Czech is potentially very rich. This is evident from the situation where a single Czech verbal phrase can contain multiple instantiations of items of category V. In other words, Czech syntax often involves large verbal structures. These are formed by a succession of individual verbs that are characterized by specific morphological forms and syntactic status. Before preparing the ground for the main argument of the thesis, let us consider the following example of these structures:

- (1) Jan            *musel*            *chtít*            *začít*            *studovat* *lingvistiku*.  
Jan            mustPast3Sg   wantInf   beginInf   studyInf linguisticsAcc  
‘Jan had to want to begin studying linguistics.’

The sentence above contains a finite form of a modal verb *musel* ‘must’ followed by a string of infinitives – an infinitive cluster – *chtít začít studovat*, a sentence subject *Jan* and an object *lingvistiku* in the accusative. Given the syntactic significance of (1), there has been surprisingly little focus on these structures in Czech academic syntax. The view on the interaction between the modal and the infinitive cluster differs in the literature. The earlier works assess both as separate syntactic constituents (Svoboda 1962, Šmilauer 1969). According to this view, only the modal is to be characterized as a verb of the sentence in (1), whereas the infinitive cluster is a complement (or ‘object’). However, more recent theories claim that the combination between the modal and the infinitive cluster forms a single, more complex sentence constituent, which is syntactically the verb (Benešová et al. 1971, Grepl & Karlík 1998).

The difference in opinion is here partially caused by the specific syntactic status of Czech modal verbs, which play a crucial role in the syntactic structures similar to (1). We will analyze this status in the course of this thesis. At this point, it is important to note that the above-mentioned opinion split is due to the fact that Czech modals have some properties that favour their individual status (and therefore the inclination towards the double constituent theory), and other properties that favour their syntactic dependency on the following infinitive or infinitive cluster (and henceforth the single complex constituent theory gains importance). The former can be called a *lexical* set of properties (such as full morphological paradigm and access to negation or ellipsis), whereas the latter is a *functional* set of properties (obligatory infinitival complementation, immunity to the imperative form, passivization and aspect to name a few).<sup>1</sup> The investigation will lead us to the understanding of the modal verbs as *semi-lexical*, which will enable us to explain the aforementioned syntactic irregularities and contribute to the unified account of modal verbs in Czech, bridging the gap in the syntactic literature. What we mean by semi-lexicity is largely discussed in the beginning of chapter 2 of the thesis. At this point, it is sufficient if we understand that a syntactic element is semi-lexical if it has both lexical and functional properties discernible from its behaviour in the syntactic structure it is a part of.

Another source of confusion is the fact that Czech is a language rich in infinitival constructions. The existence of multi-infinitival constructions such as *chtít začít studovat* ‘to want to begin to study’ is only a part of a considerably larger issue of the Czech infinitive. Again, little relevant specific research on this topic has been done since Svoboda (1962). In general, the infinitival structures in Czech have a very

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<sup>1</sup> Both sets are investigated in chapter 3 of the thesis.

diverse syntactic status and role in the syntactic structure. The common property of the Czech infinitives is that they show a certain amount of syntactic independence. In this respect, they can form an *infinitive group* (IG) (Daneš et al. 1987, Karlík & Grepl 1998). Following this line of argumentation, *chtít začít studovat lingvistiku* in (1) is an infinitive group.

There can be several different types of infinitive groups, distinguished according to the level of their dependency on other constituents in the syntactic structure. Karlík & Grepl (1998) determine three major types, the independent IG, dependent but structurally isolated IG and structurally dependent IG. The examples of the IG types, including the three types recognized in academic syntax, are demonstrated in the data (2) below:

- (2) a. {Vyhrát tak Wimbledon    aspoň jednou v životě!}IG  
 winInf so WimbledonAcc at least once in lifeLoc  
 ‘To win Wimbledon at least once in a lifetime!’
- b. {Vyhrát tak Wimbledon}IG, byl        by        nejlepší.  
 winInf so WimbledonAcc was3Sg AuxCond best  
 ‘If he was to win Wimbledon, he would be the best.’
- c. Viděl        jsem    ho        {vyhrát Wimbledon.}IG  
 seePast1Sg Aux1Sg himAcc winInf Wimbledon  
 ‘I saw him winning Wimbledon.’
- d. On musí        {chtít    vyhrát Wimbledon.}IG  
 he must3Sg    wantInf winInf Wimbledon  
 ‘He has to want to win Wimbledon.’

The data in (2) are ordered by the gradual increase of the syntactic dependency of the IG involved. Whilst (2a) contains the fully independent IG, (2d) involves the IG that is fully syntactically dependent on the modal *muset* ‘must’.

The example (2a) represents the first type of IG, which is significant for the fact that the IG is identical with the clause. The IG clause is syntactically specific in lacking both a subject and a verb in the finite form. However, it can still be considerably complex by employing adverbial adjuncts, as demonstrated by the datum (2a).

The example (2b) is a representation of a dependent, but structurally isolated IG. As in (2a), IG in (2b) is a clause. However, the difference between (2a) and (2b) is that the latter contains an IG that has a status of an embedded (conditional) clause dependent on the main clause (‘he would be the best’) in the overall conditional statement. In other words, the syntactic dependency of the IG is traceable across the sentence border.

The data in (2c) and (2d) demonstrate the third type of the IG. This type is the focus point of this thesis, as it figures in the combination of a finite verb and the infinitive in the single clause. It involves, but is not limited to, the infinitive cluster that figures in the modal structures similar to (1) above. In both (2c) and (2d), the IG is a syntactically dependent complement.

However, the exact delimitation of this dependency adds to the confusion regarding the large verbal structures such as (1). The problem for traditional syntax is that the third type of IG is a considerably diverse phenomenon in Czech, involving infinitive constructions with syntactic properties changing according to the structures they appear in. Not all of these infinitives can be characterized as a complement of the main verb. Crucially, the status of these infinitives depends on the main verb’s

characteristics. The following examples represent some instances of the third type IG with different syntactic status:

- (3) a. Viděl jsem Petra hrát tenis.  
See1SgPast Aux1Sg PetrAcc playInf tennisAcc  
'I saw Petr playing tennis.'
- b. Petr se rozhodl hrát tenis.  
Petr Refl decide3SgPast playInf tennisAcc  
'Petr decided to play tennis.'
- c. Petr začal hrát tenis.  
Petr begin3SgPast playInf tennisAcc  
'Petr began playing tennis.'
- d. Petr musí hrát tenis.  
Petr must3SgPres playInf tennisAcc  
'Petr must play tennis.'

Unlike their English counterparts, the clause structures in (3) above always contain a simple (bare) infinitive, forming the infinitive group *hrát tenis* 'play tennis'. However, the status of the IG in relation to the finite verb – its syntactic dependency – differs throughout the examples (3a) – (3d). Crucially, there are a number of tests that support further dichotomization of (3). Since they have an impact on our understanding of Czech modal constructions, let us briefly mention one, understanding that such tests will play an important part of our research later on.

The infinitive groups in (3a) and (3b) can be substituted for by a separate clause, yielding the following grammatical sentences:

- (4) a. Viděl jsem Petra, jak hraje tenis.  
 See1SgPast Aux1Sg PetrAcc how play3Sg tennisAcc  
 ‘I saw Petr playing tennis.’
- b. Petr se rozhodl, že bude hrát tenis.  
 Petr Refl decide3SgPast that will playInf tennisAcc  
 ‘Petr decided to play tennis.’

In both cases, the infinitive group is substitutable by a separate clause. In (4a), *jak hraje tenis* ‘how he plays tennis’ is an indirect question that has a character of a relative clause in traditional Czech syntax, whereas *že bude hrát tenis* ‘that he will play tennis’ in (4b) is an embedded, object clause. This difference shows that the IG in (3a) above directly complements the noun Petr and not the verb *vidět* ‘see’ and as such is the one least syntactically dependent on the verb. Similarly, the clausal substitution is available in (3b). However, the resulting object clause in this case is directly dependent on the verb. In general, clausal substitution in Czech is typical for the structures containing verbs of ‘sensing’ and their aspect variants, such as *vidět* ‘see’, *uvidět* ‘spot’, *slyšet* ‘hear’, *poslouchat* ‘listen to’. On the other hand, the object clause substitution involves mainly the reflexive ‘decision verbs’ such as *rozhodnout se* ‘decide’, *donutit se* ‘force oneself’, *umínit si* ‘make a point to’.

In contrast, the other two sentences in (3) above are not available for the clausal substitution of the IG. In the case of both (3c) and (3d), the possible substitutions are ungrammatical:

- (5) a. Petr začal, že bude hrát\* / jak hraje\* tenis.  
 Petr begin3SgPast that will playInf/ how play3Sg tennisAcc  
 ‘Petr began playing tennis.’
- b. Petr musí, že bude hrát\* / jak hraje\* tenis  
 Petr must1SgPres that will playInf/ how play3Sg tennisAcc  
 ‘Petr must play tennis.’

The data in (5) show that the original IG *hrát tenis* ‘to play tennis’ cannot be substituted for by either relative or object clause if it complements either the aspectual verbs (*začít* ‘begin’, *skončit* ‘finish’, *pokračovat* ‘continue’) or the modal verbs (*muset* ‘must’, *moci* ‘can’ *chtít* ‘want’ etc.) in Czech.

The clausal substitution test implies that the syntactic dependency of an infinitive group on the main verb is much stronger when the verb in question is a modal or aspectual verb. Returning to the introductory example (1), this view offers a new insight into the question of whether the IG *chtít začít studovat lingvistiku* ‘want to begin studying linguistics’ and the modal *musel* ‘had to’ are two separate syntactic constituents, or whether they are both part of a larger verbal complex. Due to the presence of a modal, the clausal substitution test fails in (1), pointing towards the latter as a more feasible answer.

Therefore, our main argument regarding the treatment of the infinitival constructions in Czech syntax is that the traditional differentiation between the types of IG does not emphasize enough the role of a preceding finite verb in the structure. The relation between a verb and its infinitival complement is specific where such a verb is a modal verb<sup>2</sup>, which has been known to contain both lexical and functional properties.

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<sup>2</sup> and aspectual verb to some extent



From this perspective, two points will become clear in the course of our investigation. Firstly, the syntactic structure of (2d) above will be shown to be substantially different from (2c) in terms of IG dependency, in such a way that the latter represents an additional, specific type of infinitival complementation. Secondly, the difference between (2c) and (2d) will be shown to be more syntactically significant than the difference between (2d) and (2b) or (2d) and (2a).

In this respect, the infinitival complementation of Czech modal verbs presents a challenge that leads to the redefinition of modal structures and understanding of modality in Czech. The exact manner and degree of dependency of the infinitive on the modal in general will result in the need to treat the infinitive clusters such as *chtít studovat* ‘to want to begin to study’ in (1) and *chtít vyhrát* ‘to want to win’ in (2d) as an integral part of the predicate, rather than an infinitive object dependent on the verb.

The more recent works in this area try to address the issue of the dichotomy between (2c) and (2d) either by applying the control v. raising hypothesis on the valency-based syntactic framework (Karlík 2000), or by adopting the restructuring approach towards the *verb + infinitive* structure (Medová 2001). However, both options are only able to solve the problem partially.<sup>3</sup>

The main problem can be summarized as follows: the research conducted in the environment of Czech academic syntax (Daneš et al. 1987, Karlík & Grepl 1998) does not involve a sufficient theoretical apparatus to account for the diverse (semi-lexical) status of modal verbs to offer a successful unifying syntactic theory of modals with respect to their participation in the structures such as (1) above.

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<sup>3</sup> Both approaches are discussed in chapter 2 of the thesis. Medová’s account in particular is given careful consideration, since it is an attempt to explain diverse types of infinitival complementation in Czech as a part of the restructuring issue.

The control v. raising dispute then reappears later on in chapter 8 in respect of its use as one of the main traditional factors in the analysis of root v. epistemic distinction in the modal interpretation.

The goal of this thesis is to suggest a new, more productive approach towards modal verbs and their involvement in large verbal structures typical for rich infinitival complementation. The theoretical framework employed here is generally based on the recent development of generative syntax (Chomsky 1995, 1998). However, it also involves an important modification of the generative paradigm in the process of addressing the semi-lexical issue (Emonds 1999a,b, Emonds 2001).

## 1.2. Introducing the Complex Verbal Domain

Let us repeat our initial data in (1) as (6) below for clarity of further argumentation:

- (6) Jan            musel            chtít            začít            studovat lingvistiku.  
       Jan        mustPast3Sg    wantInf    beginInf    studyInf linguisticsAcc  
       ‘Jan had to want to begin studying linguistics.’

The main syntactic task related to (6) is to identify the predicate of the sentence. Is the predicate the modal (which has the ability to agree with the sentence subjects and bear tense affixes), a combination of the modal and its nearest infinitive, or the whole V cluster? This question is closely related to the task of identifying whether the structure in (6) contains one clause, two clauses or even multiple instances of clauses. The second question concerns the right of the structure. How is the object of the sentence (*lingvistiku*) characterized syntactically? Is it a complement of the single infinitive *studovat* that immediately precedes it? Or do we have to take the whole infinitive cluster into account in determining the object?

This thesis claims that (6) involves a single predicate (*musel chtít začít studovat lingvistiku* ‘had to want to begin studying linguistics’) rather than a succession of individual predicates. In the terminology we are employing, (6) contains only one verbal phrase (VP):

(7) Jan [VP musel chtít začít studovat lingvistiku].

The structure of such a VP is to a large extent determined by the syntactic behaviour of the modal and is going to be syntactically established in the course of our investigation. Due to its specific properties, I will refer to the bracketed part of (7) as the *complex verbal domain* (CVD). The CVD in (7) is central to our research in that it involves several distinguishable adjoining Vs with restricted morphosyntactic properties. An individual verb has to have some specific syntactic as well as lexical properties to be able to partake in the Czech CVDs. Only a limited number of Czech verb groups can take on the properties necessary to enter such structures, under the circumstances that restrict their morphology and some typical syntactic behaviour.<sup>4</sup> As the data presented so far suggest, modal verbs are the prime example of this behaviour.

### 1.3. Syntactic status of the CVD

It is important to note that structures such as (6) above are clearly productive in Czech syntax, although naturally less frequent in the corpus than sentences with simple VPs, or even simple modal VPs. Moreover, there is no doubt that the modals

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<sup>4</sup> For instance, the ability of verbs to take subjects and involve the full argument structure falls into this category.

in the large CVD structures we have in mind retain all their syntactic and semantic properties, i.e. behave in exactly the same way we would expect of them as being part of simple modal structures. For instance, the sentence in (6) can be interpreted as having both root and epistemic modal readings, and the respective semantic/pragmatic contexts for both is easily justifiable: Jan can be forced to want to begin studying linguistics (root context), or the speaker can be to a high degree certain that Jan wanted to begin studying linguistics by uttering (6) (epistemic context).

From the comparative perspective, the syntactic availability and straightforward modal interpretation of sentences like (6) is not so clear in other languages. In German, *??/\*Peter musste gewollt haben die Linguistik zu studieren anzufangen* is considered out, and the equivalent in French is possible only in severely restricted semantic contexts: *Jean a dû vouloir commencer étudier la linguistique* is deemed acceptable only in the interpretation with an evidential modal.<sup>5</sup> The comparative view, although not the goal of our thesis, is noteworthy as it asks a significant question related to the character of modal constructions in the Universal Grammar (UG). Throughout the thesis, the assumption is that certain V elements of the CVD have more functional character than others, and that the order between them to a large extent matters. If that is so, and we assume a hardcore generativist's hypothesis that the hierarchy of functional categories is a universal property of languages and that syntax maps the semantic interpretation in one-to-one relation in

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<sup>5</sup> The comparison has been suggested by Peter Kosta (personal communication), who also implied that in German, the order of the participants in the large VP structure can affect acceptability. For instance, when the 'second' modal 'want' is in a position further to the right, the sentence becomes more acceptable, although still not clearly grammatical: *?Peter musste angefangen haben die Linguistik studieren zu wollen*. This thesis discusses order and locality relations between V members of the Czech CVD throughout, and will come to the conclusion that they are not just crucial for the grammaticality of such structures, but also reflect certain important syntactic mechanisms central to the derivation of the CVD.

UG<sup>6</sup>, we have to ask why other languages seem to offer less clear syntactic evidence for modal CVDs akin to (6). Perhaps the most significant answer in terms of what this thesis aims to achieve is that we are dealing with the syntactic structure with the semi-lexical core, which cannot be crosslinguistically generalized in the sense of Cinque's (1999) pure functional hierarchy. We will see that the crucial members of the Czech CVD have more or less semi-lexical characteristics that participate in the CVD derivation. Since 'semi-lexical' will be defined in chapter 2 as 'transitional' between 'functional' and 'lexical', rather than forming a third syntactic category on its own, it is clear that most of its syntactic behaviour would depend on the status of a particular language/grammar<sup>7</sup> and thus would inevitably show idiosyncratic qualities. It is precisely the occurrence of semi-lexical elements in particular languages that challenge the magnitude of syntactic universalism in Cinque's approach.

To explain the syntactic behavior of Czech CVD in a more concrete way, I will first assume that (8) below is its formal representation:

$$(8) \text{ }_{\text{VP}}[\text{V} \dots \text{V} \dots \text{V} \dots \text{V} \dots \text{V} \dots \text{X}]$$

The figure in (8) constitutes a generalized and abstract schema that applies to all Czech CVDs. The number of verbs taking part in a CVD can vary. However, a CVD must contain a finite verb followed by at least one infinitive. In general, any single VP in Czech with the structure based on (8) qualifies for a CVD.

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<sup>6</sup> The hypothesis is first clearly formulated in generative syntax by Cinque (1999). See Kosta (2003a, 2003b) for its influence on the comparative syntactic analysis of Adverbs and Negation.

<sup>7</sup> This is diachronically perceived as 'grammaticalization' (Hopper & Traugott 2003).

As already suggested, the reason for so little attention being given to the CVD structures in Czech linguistics<sup>8</sup> is that Czech syntacticians have been relatively oriented on the empirical corpus data, which wrongly suggests that sentences such as (6) are not very productive in Czech. However, the link between corpora and language productivity is not straightforward, and the collection of data gathered throughout this thesis proves that modal CVDs are not just possible, but also fairly productive in Czech syntax.

The number and especially the ordering of the verbal elements in the CVD, although clearly subject to certain rules that will be established in the following discussion, can to some extent vary. The figure in (8) above is drawn to correspond approximately to the proposed syntactic structure that is derived according to certain principles before other factors (semantic interpretation, word order etc.) are considered. To answer the questions regarding the datum in (6), I propose that the first verb (leftmost V) and the last verb (rightmost V) in the structure of the Czech CVD have a specific syntactic status that allows the CVD to attain the appropriate argument configuration.

There are not only categories of the V type amongst those that can occur in the CVD. I believe that there is a good reason in Czech for the occurrence of the structure representation corresponding to (8), and this reason is investigated in this thesis. On the other hand, I also believe that the Czech CVD is partially “transparent” for another, non-verbal (X) category. The transparency is here understood as the ability of such a category to occur within a particular CVD. In other words, some specific syntactic categories other than V (such as adverbs) can enter the CVD in a particular

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<sup>8</sup> Despite their syntactic relevance, there is no mention about modal CVDs in the relatively new terminological dictionary of Czech linguistics (Karlík et al. 2002), which has become a benchmark for further linguistic research.

position. By way of illustration, the combinatory properties of the temporal adverb (A) *včera* ‘yesterday’ in respect of its status within the CVD are demonstrated in (9):

- (9) Jan \* (*včera*) musel (*včera*) chtít ?(*včera*) začít ?(*včera*) studovat ??(*včera*) lingvistiku.  
 Jan A mustPast3Sg A want A beginInf A studyInf A linguisticsAcc

The example (9) shows that the adverb *včera* ‘yesterday’ can occur acceptably only in one syntactic position from the array of positions potentially available for adverbs. The occurrence of *včera* immediately after the sentence subject *Jan* is ruled out. When it follows the modal, it makes (9) acceptable. However, all other subsequent appearances of *včera* in post-verbal positions raise doubts regarding grammaticality<sup>9</sup>. This fact is important, emphasizing the assumption that the CVD is only partially transparent for categories other than V<sup>10</sup>. It seems that the infinitive cluster is the tightest part of the CVD regarding the interference of other syntactic elements. In general, the partial transparency does not affect the main thread of argumentation or contradict the existence of the CVD.

Even if we have to be aware of the word order phenomena and the distribution of adverbs within the Czech CVD, this thesis will propose that the CVD structure in (8) is syntactically tight enough to be considered complex, but not tight enough to contain only elements of type V. In respect of the syntactic tightness, I propose the following:

<sup>9</sup> The position of adverbs in the structure of Czech sentences has been lately reconsidered and re-established in Kosta (2003a, 2003b). There is considerable scope for discussion regarding the relation/interdependence between syntactic structures on the one hand and relatively free adverb positions based on the information structure on the other hand. This relation is complex, and it is not always clear in which cases free word order can overrule syntax and what circumstances are sufficient for it to happen. Consequently, this necessarily creates doubts regarding the grammaticality judgements of Czech native speakers that concern the example (9).

<sup>10</sup> I use the term ‘transparent’ here in the sense of accessibility for other than V categories. A CVD has a unique verbal structure represented in (8) above. This structure is transparent since it can contain other, ‘adjunct’ categories such as adverbs.

- (10) A structure consisting of multiple Vs is syntactically tight when the positions of its members are not freely interchangeable, and it behaves like the verbal complex with regards to the basic movement tests.

Given (10), I argue that syntactically tight structures are complex structures. Firstly, I am going to discuss the first part of (10). The behaviour of the Czech CVD in respect of its complexity can be demonstrated in the following set of data:

- (11) a. Jan        musel        chtít        začít        studovat lingvistiku.  
         Jan   mustPast3Sg   wantInf   beginInf   studyInf linguisticsAcc  
         ‘Jan had to want to begin studying linguistics.’
- b. Jan        musel        začít        chtít        studovat lingvistiku.  
         Jan   mustPast3Sg   beginInf   wantInf   studyInf linguisticsAcc  
         ‘Jan had to begin to want to study linguistics.’
- c. \*Jan        musel        studovat   chtít        začít        lingvistiku.  
         Jan   mustPast3Sg   studyInf   wantInf   beginInf   linguisticsAcc  
         ‘Jan had to study to want to begin linguistics.’
- d. \*Jan        musel        chtít        studovat   začít        lingvistiku.  
         Jan   mustPast3Sg   wantInf   studyInf   beginInf   linguisticsAcc  
         ‘Jan had to study to want to begin linguistics.’

The data in (11) present some of the combinatory restraints on the Czech CVD. The total number of the combinations is obviously greater, but (11) nevertheless demonstrates well the relative syntactic behaviour of the members of the CVD. It forms the basis for further research into possible rules applying to such structures.



As we can see in (11a) and (11b), the change of position between both “inner” verbs (*chtít* ‘want’ and *začít* ‘begin’) does not make the sentence ungrammatical. Here, we can make a preliminary assumption that those verbs will probably belong to the same verbal subcategory within the CVD. Furthermore, we would expect them to display a high number of identical properties that are syntactically relevant for their position in the structure.

On the other hand, the verb *studovat* ‘study’, which occupies the rightmost V position in our original example (1), forces the sentence to become ungrammatical when it appears further to the left, i.e. towards the modal. The obvious fact that needs to be tested is that the further left – or closer to the core modal – the verb *studovat* ‘study’ appears in the structure, the more unacceptable the whole structure becomes. This means that the example (11c) has a tendency to be more unacceptable in terms of grammaticality than (11d). We will leave the discussion as to the merit of this assumption for now<sup>11</sup> and indicate its potential by assigning a double question mark to (11d). Nevertheless, the most important result of the grammaticality tests made above is that the verb *studovat* ‘study’ cannot change places with any other verbs within the CVD without compromising grammatical acceptability. This syntactic behaviour is strong enough to disallow any leftward movement of *studovat* ‘study’, even if it was motivated by additional rules from different levels of language representation, such as Topic-Focus relation. The recent research confirms that (11c) and (11d) cannot be viewed as grammatical even if they are potentially emphasized and enter specific Topic-Focus relations distinguishable at the level of PF (Phonetic Form). In these situations, *studovat* ‘study’ would be a part of focus, as in *\*Jan musel STUDOVAT chtít začít lingvistiku* or *\*Jan musel chtít STUDOVAT začít lingvistiku* (in both cases,

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<sup>11</sup> The issue of the position of lexical infinitives within the Czech CVD is reintroduced in chapter 6.

the interpretation is ‘John had to want begin *studying* linguistics (and not just liking it)).’ However, the strength of the syntactic rule blocks the prospective PF rule, since it has been established recently that focus movement or Focus-stress at PF without movement cannot override syntax if a syntactically restricted rule has been violated before.<sup>12</sup> In this case, the VP boundary of the semi-complex [*studovat lingvistku*] cannot be split because of the strong syntactic relation between both constituents in terms of  $\theta$ (theta)-marking and case assignment.<sup>13</sup> Thus only the whole semi-complex can be moved to a focus or a topic position: ***Studovat lingvistiku*** Jan musel *chtít* začít. This fact also contributes to the proposition that [*studovat lingvistku*] forms the lexical right edge of the CVD.

In this respect, *studovat* ‘study’ clearly behaves differently from the two “inner verbs” discussed above, i.e. *chtít* ‘want’ and *začít* ‘begin’.

While the two “inner verbs” can exchange their respective positions without affecting the grammaticality of the CVD, the final verb appears to be restricted in terms of the positions it can appear in. In the following two sections, we will suggest a syntactic explanation of this behaviour.

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<sup>12</sup> Kosta & Schürcks (2007). The similar approach can be successfully extended to all instances of relatively free word order in Czech that appear to challenge basic syntactic rules established in generative grammar. In general, it proves useful for the analysis of languages like Czech to assume that if anything is disallowed in syntax, it cannot be brought back into the equation by any additional rules.

<sup>13</sup> The distribution of both  $\theta$ -marking and case assignment within the whole CVD is an issue crucial for the understanding of the CVD mechanics in Czech syntax, and will be further analyzed throughout the thesis, mainly in chapters 2, 6 and 8.

### 1.3.1. Movement tests for the syntactic tightness of the CVD

After clarifying what the possibilities of position-changing between members of the CVD are, and why there are some other syntactic elements that can enter these structures, we turn our attention to the second part of the definition of what ‘syntactic tightness’ means, established in rule (10).

Recall that it has been suggested that the CVD has to behave like a verbal complex in respect of the whole range of movement tests. Although there are several more tests available, those used here are the most substantial for our argument and sufficient enough to add weight to the reasoning without unnecessary repetition. The selective approach is also chosen here because the role of this thesis is not to go through all the syntactic issues developed since GB theory (Chomsky 1981) and assess their relevance here (as there is simply no space for that). Instead, we can show that some of these tests, although not central to our methodology, are interesting because they have the potential to strengthen our analysis.

The most important movement tests we have in mind are Scrambling (Bailyn 2001, Bošković & Takahashi 1998), and Clitic Climbing (CC). Since CC becomes important later in chapter 2 where we discuss the possibilities of Czech modals as raising verbs, I will concentrate mainly on the phenomenon of Scrambling for now. It is essential to present Scrambling in relation to Wh-movement<sup>14</sup> and Topicalization (Kosta 2006). The aim here is to see which of these movements are licensed by the CVD structure, and whether the complexity of the CVD is merited by some specifically created conditions on these movements.

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<sup>14</sup> There is a strong tradition of Wh-movement analysis in English linguistics, accompanied by a vast and expanding literature on the subject. The first mention on this type of movement in the interrogative clause appears in Ross (1967), whilst the latest summary together with some newer minimalist conceptions can be found in Cheng & Corver (2007).

The general examples of the relation between Scrambling and Wh-movement/Topicalization that do not involve modal CVDs are presented below (adapted from Kosta 2006):

(12) a.  $Koho_i$  Petr        *myslí*,        že Jarka miluje.  $t_i$         (Wh-movement)  
               whoAcc PetrNom think3Sg that Jarka love3Sg  
               ‘Who does Petr think that Jarka loves?’

b. PETRA Jarka        *myslí*,        že miluje.  $t_i$         (Topicalization)  
               PetrAcc JarkaNom think3Sg that love3Sg  
               ‘(It is) Petr Jarka thinks that she loves.’

c. \*... protože Petr ***vůz<sub>i</sub>***        *slíbil*,        že by opravil.  $t_i$  (Scrambling)  
               because Petr carAcc promisePast3Sg that Aux repairPast3Sg  
               ‘... because it was a car that Petr promised that he would repair.’

In (12), we deal with structures containing non-modal, simple VPs followed by clausal complements. The difference between topicalized and scrambled phrases is expressed by different marking: whilst capitals are used for the former, the bold font signals scrambled constituent. The data in (12) show that there is a difference in grammaticality between Wh-movement and Topicalization on the one hand and Scrambling on the other. Ross (1967) initially formulated the descriptive generalization that Scrambling is clause bound, i.e. no element of the ‘lower’ syntactic structure can be scrambled over the CP boundary. Since (12c) includes a clausal (CP) complement of the verb *slíbit* ‘promise’, it constitutes a CP boundary for the movement of the object NP *vůz* ‘car’ higher up in the structure. This movement – Scrambling – is thus blocked and the sentence becomes ungrammatical.

This holds true in Czech (and also German), where in contrast to Wh-movement and Topicalization, a finite CP may never be crossed by a scrambled constituent. However, the crossover is possible in the case of certain infinitival structures with weakened CP characteristics. This type of Scrambling is known as a Long Distance Scrambling (LDS), and is particularly important in CVD justification. In LDS, an object NP can be scrambled from the non CP infinitival structure (in German infinitival *zu*-complements) into the matrix IP. The Czech example is in (13):

- (13) ... protože Petr vůz<sub>i</sub> slíbil opravit<sub>i</sub> e<sub>i</sub>  
because PetrNom carAcc promisePast3Sg repairInf  
‘... because it was a car that Petr promised to repair.’

Unlike (12c), the structure in (13) involves an infinitive complementation of the main verb *slíbit* ‘promise’. As such, it does not constitute a straightforward CP boundary for Scrambling<sup>15</sup>, and (13) appears grammatical as a result. Crucially, in large modal CVDs, the equivalent of LDS is easily possible:

- (14) ... protože Petr lingvistiku<sub>i</sub> musel chtít začít studovat e<sub>i</sub>  
because PetrNom linguisticsAcc mustPast3Sg wantInf beginInf studyInf  
‘... because it was linguistics that Petr had to want to begin studying.’

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<sup>15</sup> However, (13) does not yet involve the infinitival structure of the type that would merit CVD analysis, mainly because the infinitive can be easily substituted by a clausal element (12c), which signals that the complex [slíbil opravit] ‘promised to repair’ is not sufficiently syntactically tight. Consequently, it can be argued that the infinitive is preceded by a phonetically silent subject – PRO:

- (i) ... protože Petr vůz<sub>i</sub> slíbil PRO opravit<sub>i</sub> e<sub>i</sub>

Whilst PRO can be viewed as a remnant of a CP boundary, this thesis argues (see chapter 8 for main argumentation) that modal CVDs do not involve PRO at all. Therefore, they present an even stronger case for LDS in Czech.

Given the restrictions on Scrambling, the grammaticality of (14) means that the CVD has weakened or zero CP structure, which is syntactically rather tight, similarly to German *zu*-infinitival complements. This is exactly what our analysis of Czech modal CVDs predicted.

(13) and (14) undergo similar mechanisms of LDS, which is crucial, since it shows that even large modal CVDs are transparent for certain object NP movements, regardless of the distance and number of infinitives that are crossed. It seems that in special sentences with a limited class of verbs (which we would call ‘semi-lexical’), an object NP can be scrambled out of infinitival complements precisely because they lack clausal status. It follows that if the CVD architecture is of the kind we assume, the extraction of a scrambled element is expected and accounted for, as (15c) below clearly documents:

- (15) a.  $Co_i$  Jan musel chtít začít studovat  $t_i$ ? (Wh-movement)  
           whatAcc Jan mustPast3Sg wantInf beginInf studyInf  
           ‘What Jan had to want to begin studying?’
- b. LINGVISTIKU<sub>i</sub> Jan musel chtít začít studovat  $t_i$ . (Topicalization)  
           linguisticsAcc Jan mustPast3Sg wantInf beginInf studyInf  
           ‘It was linguistics that Jan had to want to begin studying.’
- c. ... protože Jan **lingvistiku<sub>i</sub>** musel chtít začít studovat  $t_i$ . (Scrambling)  
           because Jan linguisticsAcc mustPast3Sg wantInf beginInf studyInf  
           ‘... because it was linguistics that Jan had to want to begin studying.’

(15c) is grammatical, unlike (12c) on page 20. That means that it allows a certain equivalent of LDS without violating the Scrambling rule due to the fact that

CVD does not constitute a CP boundary within itself. Hence, CVD in (15) is syntactically tight because it allows scrambling.

Finally, clitic climbing (CC) reveals similar results in respect of the syntactic character of the CVD:

- (16) a. Ale opravdu nevěděl, že **ji** musel chtít začít studovat.  
 but really NEGknowPast3Sg that clAcc mustPast3Sg wantInf beginInf studyInf  
 ‘But he really did not know that he had to want to begin studying it.’
- b. \*Ale neví **ji** opravdu, že by musel chtít začít studovat.  
 but know3Sg really that Aux mustPast3Sg wantInf beginInf studyInf  
 ‘But he really (\*it) does not know that he would have to want to begin studying it.’

The clitic in question is marked in bold in both (16a) and (16b). Both cases present the situation that resulted from the clitic climbing, i.e. a movement of the clitic from its base generated position towards the left of the sentence structure. Recent studies on the syntactic behaviour of Czech clitics (Lenertová 2004, Dotlačil 2006) point out the fact that they cannot climb out of a CP projection. CC in (16a) does not induce ungrammaticality, since it avoids the case of the CP crossover. The clear possibility of (16a) also shows, in accordance with the CC rule, that there is no intervening CP in the CVD complex [*musel chtít začít studovat*]. On the other hand, (16b) involves a clitic that climbs over the CP border occupied by the complementizer *že* ‘that’. Having such a character, this movement violates the CC rule, and causes the sentence to be ungrammatical.

### 1.3.2. Verb clusters and motives for verb clustering

We have noted in the beginning of the syntactic analysis that the members of the Czech CVD differ syntactically in terms of the positions in which they can occur in the structure. I propose the term *verb cluster* to account for the specific behaviour of multiple infinitives that form the central part of the CVD in Czech. I will define the syntactic status of a verb cluster in relation to the CVD, motivated by the datum in (1), as follows:

- (17) A verbal category (V) can be a part of a verb cluster if and only if:
- a. V is also a member of a CVD
  - b. V is in infinitive form
  - c. V does not have access to the subject of a sentence; it does not agree with the subject. However, it can access the object of the sentence when it occupies the rightmost position of the CVD.<sup>16</sup>

The requirement in (17a) says that a verb cluster is always a part of a CVD. (17b) requires any verb added to a verb cluster to be non-finite. Finally, (17c) defines the verb cluster in terms of its relation to the finite verb in the CVD. For instance, in our example

- (18) Jan    [vp musel            {chtít      začít      studovat} lingvistiku].  
Jan   mustPast3Sg   wantInf   beginInf   studyInf   linguisticsAcc  
‘Jan had to want to begin studying linguistics.’

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<sup>16</sup> At this point, this requirement covers any syntactic relation of agreement and/or case and theta-role assignment a verb can enter with respect to the subject or object of a sentence. This issue is explored in chapters 5 and 6.



{*chtít začít studovat*} is a verb cluster. We can see that no member of this verb cluster has access to the subject *Jan*, whereas the rightmost verb *studovat* selects the object (*lingvistiku*). Another result from (17) is that the CVD is larger than a verb cluster. In the case of our example, [*musel chtít začít studovat lingvistiku*] is a CVD. It contains a finite modal verb *musel* ‘had to’ and the aforementioned verb cluster. It is evident that the term CVD is motivated according to the classical notion of a phrase (Chomsky 1957). In the case of the Czech data we intend to investigate, CVD is identical to VP that contains multiple occurrences of the category V. On the other hand, the notion of Verb Cluster does not represent a phrase.

The modal in (18) agrees with the subject *Jan* and has the ability to express tense. This is enabled due to the fact that Czech modal verbs display a rich morphological paradigm, and thus can take over some properties of fully lexical verbs in the CVD structures. This behaviour of Czech modal verbs will be investigated in chapter 3 of the thesis.

Although the modal *musel* ‘had to’ is a member of the CVD in (18), it is not a member of the verb cluster in (18) as it does not satisfy the conditions (17b) and (17c). This is what we would expect since it has the more important role in the structure, such as to ensure subject-verb agreement.

All other verbs in (18) are infinitives. This is significant for our account; in the investigation that follows, I argue that the infinitive form is here obligatory.<sup>17</sup> We would not expect infinitives to be able to assign accusative case to the object of the sentence. However, whilst *chtít* ‘want’ and *začít* ‘begin’ in (18) have no access to the sentence object, it will be argued that *studovat* ‘study’ – the verb in the rightmost

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<sup>17</sup> In particular, see chapter 5 and chapter 6.

position of a complex verb phrase – can in fact contribute to the verb-object relation by assigning a theta-role to the object.

This also implies that, according to the condition in (17c) above, the rightmost V position of a CVD (identical with the rightmost position in the verb cluster) is primarily responsible for the object of the sentence. Whichever verb occupies this position has then access to the object of the sentence. Also, the verbs in finite form cannot appear in the rightmost position of a CVD.

To conclude, it is possible to claim that *chtít* ‘want’ and *začít* ‘begin’ behave as *cluster verbs* (CV) in (18). They form a verb cluster within the CVD. The modal is not a cluster verb. This situation can be best formalized by extending the figure (8) in such a way that enables us to take the different status of CVD participants into account. This is done in (19) below.

$$(19) \text{ }_{\text{VP}}[\text{V}...\text{vc}\{\text{V}...\text{V}...\text{V}\}...\text{X}],$$

where *vc* stands for “verb cluster.”

It is significant that the majority of Czech verbs cannot form a verb cluster. This thesis investigates the hypothesis that a verb is a potential candidate for entering a verb cluster only if it has properties of a semi-lexical item. What is meant by semi-lexicity is explained in chapter 2, which deals with the theoretical background of our framework.

#### 1.4. Modal verbs and the CVD

Modal verbs play an important role in the Czech CVD. Consider again the example of a multiple infinitival structure in Czech:

- (20) Jan    musel            chtít        začít        studovat    lingvistiku.  
      Jan    mustPast3Sg    wantInf    beginInf    studyInf    linguisticsAcc  
      ‘Jan had to want to begin studying linguistics.’

The modal *musel* is the finite verb in (20). It agrees with the subject of the sentence and has the infinitive cluster complement. Two facts regarding modals are important for the understanding of the Czech CVD. Firstly, the presence of a modal verb always signals that the verb structure has the character of a CVD, rather than of a simple VP. Secondly, the majority of verbs in a CVD are modal verbs. In fact, larger CVDs such as the one in (20) cannot be derived without the presence of modals. (20) contains two modal verbs, *musel* ‘must’ and *chtít* ‘want’, and the aspectual verb *začít* ‘begin’. For now, we leave any theoretical assumptions about the co-occurrence and character of both modals in a single CVD until chapter 4 of the thesis.

One of the first comprehensive attempts to discuss modality in Czech as a specific issue dates back to Benešová et al. (1971). The work presented there provided input for the investigation of modality mainly from semantic (Benešová 1973) and pragmatic (Grepl 1972) viewpoints in the Czech linguistic environment. Although the issue of modal verbs appears separately in the representative Czech grammars (Daneš et al. 1987, Karlík et al. 1995, Karlík & Grepl 1998), there has been surprisingly little development of its study since the seventies. Interest in the specific syntactic properties of modals in Czech was re-kindled in Karlík (2001), who narrows the focus

of research to the behaviour of modals in syntactic structures. He notices that there are several specific properties that syntactically distinguish the group of Czech modal verbs from the majority of other verbs. Although he uses a different theoretical framework, Karlík's study asks a relevant basic question: what is it that makes modal verbs syntactically specific? We will see in chapter 3 of the thesis that this question forms the basis for our semi-lexical approach. From this perspective, some of the observations made by Karlík, regardless of being motivated differently, are similar to ours.

The issue of modality in Czech was again recently given the full attention it deserves at an international symposium about modality in Slavonic languages in Regensburg, Germany. The goal of the symposium was to compare the role and characteristics of modal systems in Slavic from a broad perspective, involving traditional semantics and pragmatics, as well as newly addressed morphological and syntactic features. The conference's monograph (Hansen & Karlík 2005) includes works that are representations of different theoretical positions, often focusing on the different aspects of modality. One of the most substantial themes of the symposium is the question of how the modal systems of individual Slavic languages are developed in the process of grammaticalization, i.e. the transformation of formerly lexical language units into functional (grammatical) items.<sup>18</sup> Since this thesis does not deal with the diachronic aspects of the modal system in Czech, the concept of grammaticalization is not discussed.

Every enquiry regarding the modal verbs and modality in a given language has to deal with a few recurring issues. In one of the recent accounts of modal verbs

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<sup>18</sup> The role of grammaticalization in the development of modal systems in Slavonic is discussed in Hansen (2001, 2005). The author argues that the emergence of modals is an example of a successful grammaticalization.

within generative syntax, Butler (2003) outlines the major issues that every “good theory of modality” should aim to explain. These are enumerated in (21):

- (21) a. The epistemic/root distinction: how and where it is derived.
- b. The PF form of modals: why modals cross-linguistically show up with the same PF for epistemic and root senses.
- c. The scope properties of modals: how these properties come about, what exactly they are, and how they interact with other scope-bearing elements in the clause (Butler 2003: 3).

The issues outlined in (21) mostly deal with the epistemic v. root distinction. All three points are related to the dichotomy between epistemic and root interpretation. Therefore, let us call this approach to the theory of modal verbs the ‘bipolar assumption of modality’. The basic premise within this assumption is that the explanation of epistemic v. root distinction is either the only relevant task for the theory or is to be accorded priority in the theory.

However, the modal theory based solely on the requirements in (21) is insufficient to explain some of the issues that have been identified at the heart of the theory of Czech modals presented in this thesis. It cannot account for the role of modal verbs in the CVD and it also does not question their syntactic status. In the course of the thesis, I suggest replacing the bipolar approach to modality by the semi-lexical approach. The semi-lexical approach retains the issue of root v. epistemic distinction<sup>19</sup>, whilst emphasizing that there are other relevant factors, such as the infinitival complementation, which need to be accounted for in the syntactic theory of modality in Czech. It will be demonstrated in the course of the thesis that the semi-lexical status is a unified attribute of all Czech modals. In other words, I will suggest

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<sup>19</sup> The issue is discussed in-depth in chapters 8-10 of the thesis.

that all modal verbs in Czech behave identically at the level of syntactic derivation, regardless of their root or epistemic interpretation. This behaviour derives from their semi-lexical character. It does not mean that the difference between root and epistemic ceases completely to be relevant for the theory. It is simply postponed in accordance with the shift of priorities. The requirements for the modal theory therefore need to be revised to address all new questions posed. The revision has the following character:

(22) The theory of modality presented here deals with the following issues:

- a) Modals as a syntactic category different from other verbs: are they lexical (of category V), functional (I, or specifically Mod type category), or semi-lexical? How are their semi-lexical properties reflected in grammar?
- b) Modal verbs in the lexicon: Is there a unifying lexical entry for modal verbs?
- c) The status of modal verbs in derivation and its relation to the derivation of the CVD structure.
- d) Epistemic v. root distinction
  - At what level of representation is it recognizable?
  - The PF (Phonetic form) of modals as a cause for ambiguity: why modals cross-linguistically appear with the same PF for epistemic and root interpretations. Arguments against the lexical and/or derivational solution
  - The LF (Logical form) as a solution to the ambiguity problem. Scope properties of modals, how these properties come into play, what exactly they are, and how they interact with other scope-bearing elements in the clause.

This thesis proposes that it is the semi-lexical status of Czech modal verbs that makes them differ from other verbs. Their semi-lexical properties are manifested by

their lexical entry (subcategorization frame) and the role they play in the derivation of the CVD. The consequence of our treatment of Czech modals as semi-lexical items is that they cannot be interpreted syntactically under any functional projection, whether it is traditional IP or more recent ModP (Ouhalla 1990, Cinque 1999, Wurmbrand 2001). This thesis aims to adhere to the principle of operating with the minimum of basic syntactic categories, which can be specifically found in Emonds (1999, 2001). Such an approach is in accordance with the rule of parsimony, which will be employed in course of our research; it is desirable that the syntactic theory of modality does not expand the structure unless absolutely necessary. I assume therefore that there is no need for a new specific category to be assigned to Czech modals. They are still verbs, distinguished from other verbs by the ability to enter V+Vinf structures. How this difference is explained syntactically will be seen in the following chapters.

The structure of the thesis follows the requirements that the theory of Czech modal verbs establishes in (22) above. Hence, the organization is as follows:

Chapter 2 explores the issue of semi-lexicality and related theoretical concepts. I will start with Emonds' (1985, 2001) concept of semi-lexicality developed against the background of the difference between grammar on the one hand and the lexicon on the other. Emonds' main contribution towards our understanding of semi-lexicality in language is his establishment of the difference between 'functional' and 'lexical' across the syntactic categories. Specifically, Emonds has noted that a certain restricted number of members of traditional lexical syntactic categories such as N (nouns) and V (verbs) in English shows behaviour similar to that found in functional categories such as I (auxiliaries) and D (articles). We will discuss that whilst Emonds calls them 'semi-lexical', his interpretation suggests that they are in fact functional, on

a par with fully grammatical items such as articles. Therefore, whilst Emonds' reasoning behind the concept of semi-lexicality is adopted in the thesis, we reject the approach that treats potential semi-lexical candidates as those that underwent a full grammaticalization process. The definition of semi-lexicality is modified with the help of Haider (2001) to account for the less obvious examples on the one hand, and the different levels of semi-lexicality on the other. After establishing what is meant by semi-lexicality in relation to the verbal groups in the Czech CVD, I will briefly mention the overall situation in Czech regarding semi-lexical research in general.

This will be followed by the investigation of the theoretical concepts that are related to the modified semi-lexical theory. These are mainly *restructuring*, *light verbs* and *complex predicates*. Firstly, I will discuss an approach attempting to establish restructuring in Czech (Medová 2001). Secondly, I will look at the way the concepts of light verbs and complex predication deal with the phenomenon that proves to be essential for the identification of semi-lexical candidates in the verbal domain – argument structure redistribution.

The issues in (22a) are dealt with in chapter 3 and chapter 4. Chapter 3 presents evidence that Czech modals have both lexical and functional attributes. We start with the enumeration of the relevant lexical properties, showing that modal verbs in Czech display the full morphological paradigm identical to that of lexical verbs, undergo syntactic negation in the same way as lexical verbs and can take part in the syntactic ellipsis together with lexical verbs. On the other hand, we mention the functional properties of Czech modals such as their inability to take clausal complements or to distinguish aspectual pairs.

Chapter 4 argues that in the light of the previous observations, there are sufficient grounds for distinguishing between two typologically different groups of



modal verbs in Czech. These are called True modal verbs (TMVs) and Optional modal verbs (OMVs). We will establish that TMVs clearly differ from OMVs in terms of the ratio between lexical and functional properties. Both TMVs and OMVs show an important semi-lexical behaviour established in chapter 3. However, whilst TMVs are more functional, OMVs will be shown to contain more lexical properties. In other words, TMVs will be considered more grammaticalized than OMVs.<sup>20</sup> The difference has an important impact on the large verbal structures involving multiple modals in Czech. Our data will show that it is possible to have double modal structures in Czech if the modals appearing together in the CVD are not both of the TMV type. Evidence for the dichotomy of TMVs v. OMVs will be found to have parallels in both syntax and semantics and is summarized at the end of chapter 4.

Chapter 5 addresses (22b). The crucial question is what constitutes the lexical entry of Czech modals. Given the preceding discussion, the aim is to link the semi-lexical behaviour observed in Czech modals with the fact that they subcategorize for a specific complement in the Lexicon, namely the infinitive. I propose a unique lexical entry for modal verbs in Czech that distinguishes them from fully lexical verbs. The remainder of the chapter discusses some problematic cases that seem to suggest that Czech modals are able to select complements other than the infinitive structure, and explains why this is actually not the case.

Chapter 6 discusses the issue of (22c). With respect to the derivation of large modal structures such as the original example (1), I will advocate the combination of the minimalist syntactic framework (Chomsky 1995) with the concept of flat structures (Emonds 1999b). I will introduce the ‘light’ head of vP into the modal system and argue that the modal CVDs are derived prior to Spell-Out as vPs that

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<sup>20</sup> This difference could not have been accounted for if we maintained Emonds’ original assumption that all semi-lexical items are at the same level of grammaticalization, but it is easily explained by our modified approach to semi-lexicality presented in chapter 2.

contain flat structures, with the modal verb being inserted into the head of vP. The flat structure argument will be shown as a better alternative to a super tree in the style of Cinque (1999) with multiple empty phrasal projections for each verb in a CVD. The remainder of the chapter will address the disadvantages of reintroducing flat structures into the theory with the aim of showing that they are outweighed by the problems presented by the alternatives.

The goal of chapter 7 is to link the research that has been done so far with the semantics of modal verbs. I will argue that the semantic perspective cannot be avoided and that it adds important knowledge to our understanding of the behaviour of modal CVDs. I will adopt Kratzer's (1998) semantic theory, using the concept of possible worlds. The main idea that will be proposed is that the natural semantic ability of modal verbs is to scope over limited sets of possible worlds. The semantic theory will also address the behaviour of the multiple modal structures in Czech. I will show that the sets of relevant possible worlds are determined by the interaction between the two types of modals within a single CVD.

The remaining three chapters of the thesis deal with another unavoidable issue, the root v. epistemic dichotomy. The requirement (22d) above suggests that any good theory of modality has to involve an explanation of the dichotomy, and chapters 8 – 10 aim to do that whilst linking the issue closely to the principle of the modal vP derivation established in earlier chapters. We will see that most of the Czech modal verbs distinguish between both interpretations, whilst their phonetic form remains unchanged. From this perspective, the discussion of root v. epistemic is crucial since it initially appears to pose difficulties for the unifying syntactic account of Czech modals, presented in detail in chapter 6. This is due to the fact that some researchers suggest that there is a separate lexical entry for epistemic modals, different from that

of root modals (Bobaljik & Wurmbrand 1999), and others argue that epistemic modals enter different syntactic structures than root modal verbs do (Drubig 2000).

Therefore, chapter 8 critically examines the theories that place the distinction between root and epistemic at the level of the Lexicon. It argues against the assumption that root modal verbs differ from epistemic modal verbs in that the former are two-place predicates, whereas the latter are one-place predicates in the Lexicon. Consequently, the remainder of the chapter criticizes the concept of raising v. control as a valid explanation of the dichotomy.

Chapter 9 then addresses the theories that propose a different syntactic derivation for root and epistemic modal readings. I will follow the main line of argumentation suggesting that Tense and Negation have the ability to split the derivation of modal structures according to their interpretation (Drubig 2000), and show that there is not enough support for it in Czech. For instance, it will be demonstrated that epistemic as well as root modals can be derived both above and below the negation, which makes the argument inconclusive.

Finally, chapter 10 will include the solution to the root v. epistemic issue that is in accordance with our main syntactic hypothesis – that all modal verbs, regardless of their interpretation, are inserted into the semi-lexical head of vP in derivation. During the course of the chapter, I will adopt Butler's (2003) LF analysis and propose that the modal interpretation in terms of root v. epistemic is achieved after Spell-Out at the level of LF. I will also suggest that LF is responsible for all scope properties of Czech modal verbs.

## Chapter 2

### *Semi-lexicity and related issues*

## 2.1. Introduction

The multiple verb structures similar to the Czech CVD introduced in the previous chapter have been the subject of research in a number of other languages and has led to the development of several theoretical concepts (*semi-lexicality*, *complex predicates*, *light verb theory*, *restructuring*) that play a crucial part in contemporary syntax. These approaches are discussed in this chapter mainly for the following reasons:

They form a theoretical background to the research presented in the thesis. As we demonstrate later in the chapter, all the above-mentioned notions have been introduced into the syntactic frameworks to account for the specific behaviour of a certain group of verbs in multiple verb structures. They are, to a certain extent, interrelated: for instance, there is a probability that complex predicates contain what has been known as ‘light verbs’, and that we can test some properties of these structures on the basis of the restructuring principle. Moreover, restructuring theory has been adapted to Czech syntax in Medová (2001). It has been done with a questionable degree of success, as will be seen in section 3.2.2. However, Medová’s attempt will demonstrate that the theoretical concepts mentioned in this chapter are relevant to our research and have to be scrutinized in order to establish their status in the theory presented in the thesis.

Semi-lexicality is the most important notion, as it stands at the core of the theory. We have already mentioned in the introduction that Czech modal verbs, as the most dominant building blocks of the CVD, have semi-lexical properties. The following section explains what is meant by ‘semi-lexical’.

## 2.2. Semi-lexicality in language and theory

### 2.2.1. The origins of the notion (Emonds' approach)

The dichotomy between lexical categories (content words<sup>21</sup>) and functional categories (function words) is central to syntactic theory. Lexical categories (N, V, A, P) are items that have a specific semantic content and carry the principal meaning of the sentence. On the other hand, functional categories have a non-conceptual meaning and fulfil a grammatical function (Corver & Riemsdijk 2001: 1). Emonds (1985) characterizes lexical items as members of an *open class* category. The primary defining element of the open class category is the possibility to add freely new members to this category. Thus a V category of a given language is an open class category as new members (neologisms) are added during the historical development of the language. Functional categories are members of the opposite, *closed class* of words. Since they are defined grammatically, their number in a language is finite. They function as grammatical operators that bind the lexical items together, similarly to logical operators binding statements. As it is impossible to “invent” a new operator in logic, it is practically impossible to add new members to the set of grammatical items.

There is a host of properties uniquely defined in theories of grammar that have the ability to differentiate between functional and lexical items. Corver & Riemsdijk (2001; 1-23) mention a few that play an important part in our framework. They are outlined in (1):

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<sup>21</sup> A term devised by Corver & Riemsdijk (2001:1).

- (1) a. Phonological and morphological dependence (clitic status)
- b. Selectional characteristic (categorical uniformity v. variations of subcategorization)
- c. Participation on  $\theta$ -marking (Ouhalla 1991, Chomsky & Lasnik 1993)
- d. Movement/displacement (Abney 1987 – inseparability of functional elements from their complement)

Lexical items are represented in grammar as full morphological and phonological units. Functional items, on the other hand, enter the grammar as dependent on the lexical items in terms of their morphology and phonological status. They have often the characteristics either of clitics or word morphemes/ affixes (or a combination of both) – they are typically unstressed, and sometimes even null. In Czech, the auxiliary *byť* ‘be’ is typical by virtue of its phonological and morphological dependence on the lexical verb.<sup>22</sup> It is stressless and has a whole array of forms that function as syntactic affixes but can undergo movements such as clitic climbing.<sup>23</sup>

The morphological restriction of the functional items influences their selectional properties. It has been generally agreed that a functional element can combine only with a specific categorial phrase. Thus since Chomsky (1957), English auxiliaries, being identified as members of I category in Chomsky (1986), combine with a lexical VP. The category D, introduced by Abney (1987) for the functional items such as articles and personal pronouns, has to combine with NP. Lexical items on the contrary can take several different types of syntactic categories as their complements. In other words, their subcategorization frames allow more variety in complement selection. Corver (2001: 2) shows that the verb *believe* can select either a

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<sup>22</sup> Likewise with semi-lexical verbs like modals and aspectual verbs. Czech modal verbs have a nearly full morphological paradigm and use the ‘be’ auxiliary in the same way the lexical verbs do (See chapter 3).

<sup>23</sup> See Veselovská (2003).

noun phrase (DP; *I believe that story*), or a clause (CP/IP; *I believe that he is ill; I believe him to be ill*) as its complement.

Furthermore, lexical items can enter into  $\theta$ -marking processes. The ability to assign  $\theta$ -roles is not accessible to the functional items (Ouhalla 1991, Chomsky & Lasnik 1993). This in general means that only lexical elements in grammar can participate in the argument structure.

Finally, the difference between functional and lexical items is related to the possibility of their movement within the syntactic structure, as well as their ability to license syntactic movements. The assumption here is that the movement activity of functional items is either considerably restricted, or dependent on the behaviour of their lexical complements. Abney (1987) suggests that the functional elements are usually inseparable from their complements. Complements of lexical heads on the other hand can be easily moved out of the vicinity of the lexical heads, whether the reason is topicalization or something else. The difference is that the lexical head is able to license the empty category left in its complement position ([*That Mary hates soccer*]<sub>I</sub> *I don't believe*<sub>i</sub> is a well-formed structure, whereas [*Mary hates soccer*]<sub>I</sub> *I don't believe that*<sub>i</sub> is not).<sup>24</sup>

The idea behind semi-lexicality is that the main lexical categories N, V, A, P (Emonds 1985) are re-defined in respect of their lexical characteristics. This means that in theory, the property of being functional or lexical ceases to be an absolute property associated with the respective category. The category V, for example, contains elements that do not involve all properties listed in (1) in a way we would expect from fully lexical items. Instead, their behavioural patterns seem to oscillate between lexical and functional.

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<sup>24</sup> The data are taken from Cover & Riemsdijk (2001)



This is typical for many of those Czech verbs that can enter the CVD as represented in chapter 1. Modal verbs and aspectual verbs in Czech are prime candidates for semi-lexicality since they behave inconclusively regarding (1a-b) above.<sup>25</sup> Czech modals, for example, can participate in the predication and argument structure of the CVD. Chapter 5 will show that their subcategorization frame is restricted to an extent we would expect from the functional categories.

It has been pointed out recently that the difference between functionality and lexicality, although useful, is too coarse to account for the nuances of functional/lexical behaviour in grammar. Across languages, lexical items have been noted to contain a certain degree of functionality, and functional items have been suspected of lexical behaviour. Emonds (1985) collects the evidence of those members of traditionally lexical classes N, V, A, and P that involve substantially restricted semantics (i.e. lack purely semantic features). Such items, according to Emonds, form closed class subgroups within the groups of lexical categories N, V, A and P.

Emonds builds the difference between lexical and functional items on the understanding of syntactic and semantic features in generative grammar. Since Chomsky (1965), syntactic features (F) play a central role in syntactic derivation. Semantic features (f) on the other hand play no part in the derivation of syntactic structures. The closed class items within a certain lexical category form the *Syntacticon* of a given language (Emonds 2000). In Emonds' theory, closed class items are distinguished by their lack of purely semantic features. For instance, there is a group of English verbs such as *make*, *go*, *take*, *give* etc. that are characterized as grammatical verbs. They regularly enter syntactic structures in the positions

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<sup>25</sup> See chapter 3.

resembling the true auxiliaries (*take a walk home*, American English *go buy bread*<sup>26</sup> etc.) and resist our attempts to attach any kind of purely semantic features to them.

Consequently, Emonds (2001: 29) defines semi-lexical heads as those N, V, A and P items that have no purely semantic features *f*. This means that they are identified as grammatical heads, identical in their behaviour with functional I, C, D, etc. The lexicon thus involves two basic types of entries, open class items in N, V, A and P categories with both *F* and *f* features and closed class items in all categories (in I, C, D etc. obligatorily) with only *F* features.

(2) Emonds' definition of semi-lexicity:

Semi-lexical heads (= grammatical heads) are those N, V, A, and P which have no purely semantic features *f* (*people, thing, do, get, much, so, by, of* etc.).

Emonds (2001: 29)

The definition in (2) involves a functional interpretation of semi-lexical items, focusing on their “grammaticalization”. It presupposes that all semi-lexical heads are the same grammatical items as the functional heads – both are central to the syntactic derivation by employing the syntactic feature *F*. However accurate, this assumption does not describe the semi-lexical items in their entirety since it disregards the partial lexical status of some semi-lexical items. Although Emonds does not treat N, V, A and P entries without *f* as an independent grammatical types (categories), his approach assumes that *f* is a distinctive (polarity) feature. This means that a member of the V category either has *f* and then it is a full lexical verb (such as *conduct*, +*f*), or it lacks *f*, and so it is a grammatical head (*do*, -*f*). In chapter 5, I will show that *f* has to be

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<sup>26</sup> See Cardinaletti & Giusti (2001; 371- 415)

modified for the adequate interpretation of Czech V semi-lexical candidates, especially modal verbs.

### 2.2.2. Modified theory of semi-lexicality: the scale approach

Although they show strong grammatical behaviour, modals and aspectual verbs in Czech still retain some remnants of a purely semantic feature *f*. Subsequently, I propose two hypotheses for Czech semi-lexical heads that modify Emonds' assumption:

- (3) a. A purely semantic feature *f* functions as a distinctive feature in the differentiation between fully functional and fully lexical items. It is a non-distinctive feature within the definition of semi-lexical items.
- b. Only functional closed class items (of category C, I, D etc.) completely lack purely semantic features.

(3) also suggests that there is not an independent, third type semi-lexical category, next to functional and lexical categories in grammar. Neither is it a category that would be identical solely to the functional category in its display of grammatical behaviour.

The understanding of a semi-lexical head within the framework that we are employing here is that it is not conceived of as an independent grammatical type on a par with the two established classes. A similar approach, albeit with different motivation, has been suggested in Haider (2001). Haider's concept of semi-lexicality and our understanding of semi-lexical elements in the Czech CVD have one common premise. Specifically, the semi-lexical 'category' is not a standalone notion,

established purely on the background of distinctive features. Instead, it is derived from the respective canonical format of the existing categories (Haider 2001: 68).

Haider uses the term ‘semi-lexical heads’ and proposes that some of them are based on the major lexical heads, whilst others can be derived from the functional heads. This reflects the fact that he models the concept of a semi-lexicality on two factors: the position of a head in the syntactic structure and the selection properties of the head.

The first factor determines whether a certain head position involves sets of primary lexical candidates (lexical content), and since all lexical heads have lexical content by default, this factor is important in distinguishing semi-lexical heads from the group of functional heads.<sup>27</sup> It will become evident in the course of this investigation that the semi-lexical verbal heads that can appear in the Czech CVD structure are all based on major lexical heads. In general, I propose that Czech semi-lexical candidates, whether verbal or nominal, are derived from lexical rather than functional items. The analysis of the semi-lexical behaviour of Czech modals will add evidence to this proposal, which renders the first semi-lexical factor in Haider’s system irrelevant for our purposes.

On the other hand, the second factor is highly relevant to our research. It determines whether a head has a fully specified argument structure and is decisive in the identification of semi-lexical heads derived from the major lexical heads. The fact that semi-lexical verbal heads can have an underspecified argument structure makes

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<sup>27</sup> This results in Haider’s notion of *lexical functional heads*, which are given the semi-lexical status. According to Haider, there are two lexical functional heads in English and German syntax, C° and D°. They both gain semi-lexical status due to the fact that they are listed in the Lexicon as a lexically identifiable class and constitute syntactic positions that are characterized by primary lexical candidates. For instance, a complementizer element is a primary candidate for the C° position in English, whilst there is no primary lexical candidate for the I° position in a finite clause (Haider 2001: 67). Therefore, I° is strictly functional (*non-lexical/canonical functional head*), a pure structural entity (Haider 2001: 69), whereas C° is semi-lexical.

them different from the canonical lexical heads. For instance, the use of *kriegen* ‘get’ in German, yielding structures with a passive effect, is an example of a semi-lexical verb:

(4) a. Er kriegte \*(etwas) (von seinen Eltern)  
‘He got something from his parents.’

b. Der Besucher kriegte etwas gezeigt  
‘The visitor got something shown.’

(Haider 2001: 84-85)

The specific property of German *kriegen* is that it can behave both like a lexical and semi-lexical head. The example in (4a) involves *kriegen* as a fully lexical, transitive verb, whereas (4b) represents its semi-lexical use. Haider argues that the effect of the semi-lexical use of a verb is a defected argument structure. In the example above, the *kriegen* behaves as a lexical causative verb with full argument structure in (4a) and therefore has to select an object (theme) argument. However, it does not select an object in (4b), which is characteristic of a semi-lexical variant.

Haider’s approach is useful in the way it treats semi-lexicality as a derived, fuzzy property rather than a defining attribute of a language item per se (and thus represents a step forward from Emonds’ strict feature categorization). The necessity of this approach becomes apparent, especially in cases where a single verb can be used both as a canonical lexical head and semi-lexical head (shown in the example (4)). In general, the common property of members of category V is to take arguments, and hence subcategorize. However, German *kriegen* and other verbs that can be

characterized as semi-lexical candidates are able to take a V-headed complement, which has to be specified in their subcategorization frame.<sup>28</sup>

The addition of the ‘underdeveloped argument structure’ as one of the determining factors of semi-lexical behaviour in the verbal domain is substantial, especially since I have suggested in (3) above (and will explore further in chapters 5 and 7) that the lack of a purely semantic feature *f* is not a distinctive factor in explaining semi-lexical behaviour. However, there are other secondary factors that influence the semi-lexical behaviour of CVD participants. Two of the most important ones are ‘inability to nominalize’ and ‘lack of event denotation’.<sup>29</sup> Importantly, these secondary factors do not distinguish between a semi-lexical head and a canonical lexical head, but between the levels of semi-lexicality instead.

When analyzing semi-lexical behaviour, the ultimate goal of this thesis is to emphasize the ‘degree’ characteristics of semi-lexicality, rather than establish its status as a ‘primitive’ of the system. Some semi-lexical items in grammar have a higher degree of functional properties with respect to the functional v. lexical relationship (Czech true modal verbs), whereas others display a greater number of lexical properties (Czech aspectual verbs). Let us return to the crucial data we discussed earlier to demonstrate the situation:

- (5) Jan            musel            chtít            začít            studovat    lingvistiku.  
       Jan        mustPast3Sg    wantInf    beginInf    studyInf    linguisticsAcc  
       ‘Jan had to want to begin studying linguistics.’

We have established that the Czech sentence in (5) above contains the subject *Jan* and the large CVD *musel chtít začít studovat lingvistiku* ‘had to want to study linguistics’.

<sup>28</sup> See chapter 5 for analysis of the subcategorization frame of Czech modals.

<sup>29</sup> These will be analyzed in chapter 4.

In the example above, the CVD contains two modal verbs (*muset* ‘must’ and *chtít* ‘want’), one aspectual verb (*začít* ‘begin’) and one lexical verb (*studovat* ‘study’). It has been pointed out that every CVD structure involves a verb with a full lexical character and number of other verbs with specific – semi-lexical – properties. Therefore, the semi-lexical behaviour of its members proves to be an important building block of the CVD structure. Regarding this behaviour, I argue that a CVD such as the one in (5) contains verbs with various degrees of lexical to functional ratio. The variety is based on the individual characteristics of the verbal groups themselves, and it is not accountable for by the application of Emonds’ system.

Modal verbs are the most frequent CVD participants, and therefore command the centre of our attention. However, other verbal groups such as aspectual verbs can enter the CVD structure, as is shown in (5). Crucially, there are certain modals in Czech (*muset* ‘must’, *moci* ‘can’ *mít* ‘have to’ among others) that show a greater degree of functional behaviour than other modal verbs (*chtít* ‘want’, *umět* ‘be able to’), which suggests that the group of modal verbs has to be split according to the variety in the semi-lexical behaviour of its members. This split will be extensively argued for in chapter 4. Although the focus of our research is centred on the group of Czech modal verbs, we will see that those modals displaying a lesser degree of functional behaviour are in fact similar to the aspectual verbs in terms of their semi-lexical behaviour.

Putting the reasoning behind the distinction between different semi-lexical types of verbs aside for now<sup>30</sup>, it is important to note at this point that semi-lexicity is not a homogenous concept in our theory. I propose that datum (5) involves three semi-lexical verbs: *muset* ‘must’, *chtít* ‘want’ and *začít* ‘begin’. The first modal verb

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<sup>30</sup> This will be further addressed in chapter 4.

(*mušet*) has the greatest degree of functional character, whereas the second modal verb (*chtít*) and the aspectual verb (*začít*) behave more like lexical verbs in the mentioned CVD structure.

The importance of the modified theory of semi-lexicality lies in its ability to account for different types of semi-lexical items and distinct motives of the semi-lexical behaviour in grammar. Its advantage is that it uses the term ‘semi-lexical’ as a cover term for all non-canonical properties of both lexical and functional items. Consequently, it offers more flexibility in interpreting different types of semi-lexical items in Czech CVD.

From the theoretical perspective, the aim of the modification is to replace Emonds’ feature explanation with the scale system. To conclude this section, I propose the following semi-lexical scale for Czech CVD:



(6) represents an abstract line bordered by a ‘fully functional’ point on one side and a ‘fully lexical’ point on the other side, semi-lexicality being everything in between.

It is essential to identify V members of the CVD in Czech with different points on the scale. The scale system enables us to express the different number of semi-lexical properties that distinguish between individual verbs entering a CVD structure. The semi-lexical scale in (6) expresses a gradual increase/decrease of functional/lexical properties that is observed between the members of the CVD. If the theoretical left border-point on the scale expresses 100% functionality and 0% lexicality, and the right border-point expresses 0% functionality and 100% lexicality, the elements positioned to the left of the scale are more functional and less lexical



than those to the right. For instance, the modal verb *muset* ‘must’ in the example (5) has more functional properties than *chtít* ‘want’ and aspectual *začít* ‘begin’. This would be reflected on the scale by putting *muset* closer to the left – functional – point than *chtít* and *začít*. The further a verb moves to the right on the scale, the more functional properties it loses and more lexical properties it gains.

Generally speaking, the ideal outcome of a scale system is that it reflects the ordering of the verbal elements in the CVD structure. It has been shown in chapter 1 that some participants of a CVD can change positions with each other, whereas others have to stay in a fixed position. Given example (5), we have seen that *muset* ‘must’ had to occupy the leftmost position in the CVD structure. In contrast, *chtít* ‘want’ and *začít* ‘begin’ were able to change any following positions without affecting the grammaticality of the clause. This means that they are on the same level as semi-lexical elements and would have to be placed close to each other on the semi-lexical scale.

### 2.3. Non-verbal semi-lexical candidates in Czech

Whilst the understanding of semi-lexicity in terms of the scale system in the previous section was based first and foremost on the CVD (V+V) structure, this section briefly explores the approaches that argue for the existence of semi-lexical elements in the Czech nominal domain, namely N+N structures. I will introduce Veselovská’s (2001a) argument in favour of several types of the semi-lexical candidates with a quantifier status that extend the Czech nominal projection and show that the broad variety in their status and behaviour strongly supports the scale approach to understanding semi-lexicity.

### 2.3.1. Group nouns and quantifiers

There are numerous candidates for semi-lexicality within the nominal domain in Czech. Veselovská (2001a: 273-323) shows that many lexical nouns such as *skupina* ‘group’, *řada* ‘row’ and *hromada* ‘pile’ can gain functional properties of quantifiers (Q) projecting above the Czech complex DP structure. In accordance with the scale definition of semi-lexicality, Veselovská suggests that there are four distinguishable types of quantifying elements that select DPs in Czech, distinct from each other by the amount of nominal properties they retain. These types are  $N_Q$  (*sklenice vody* ‘glass of water’),  $Q_N$  (*spousta chlapců* ‘lot of boys’),  $Q_{GEN}$  (*mnoho vody* ‘much water’), and  $Q_A$  (*všichni chlapci* ‘all boys’). Whilst  $Q_N$ ,  $Q_{GEN}$  and  $Q_A$  are primary quantifiers,  $N_Q$  has the potential to become a quantifier secondarily.

Veselovská devises several tests to show the relevant properties of  $N_Q$ ,  $Q_N$ ,  $Q_{GEN}$  and  $Q_A$  that merit their differentiation into the aforementioned types. Importantly, the difference of behaviour discovered by the application of these tests outlines the graduality in the semi-lexical characteristics of the quantifying elements preceding a noun phrase in the Czech complex nominal structure.

For instance, the following data modified from Veselovská (2001a: 276) show that  $N_Q$ , and not  $Q_N$ ,  $Q_{GEN}$  or  $Q_A$ , is open to ‘relativization’ (a modification by a relative clause):

- (7) a. Před domem byla skupina ( $N_Q$ ) chlapců, která se pohybovala  
in front of house was a group boysGen which Refl movePast  
‘In front of the house there was a group of boys, who were moving.’

- b. \*Před domem byla spousta (Q<sub>N</sub>) chlapců, která se pohybovala  
 in front of house was a lot boysGen which Refl movePast  
 ‘In front of the house there were a lot of boys, who were moving.’

In (7a), N<sub>Q</sub> *skupina* ‘a group’ can be modified by a relative clause since it is able to agree with both the relative pronoun *kteřá* ‘which’ and the verb *pohybovat* ‘move’. This is due to the fact that Czech N<sub>Q</sub> is closer to the lexical noun in retaining its agreement and feature characteristics than other semi-lexical candidates in the nominal structure.

In contrast, (7b) shows that the relativization process renders the structure ungrammatical in case of the Q<sub>N</sub> *spousta* ‘lot’, which has fewer properties that would enable it to behave similarly as a lexical noun in terms of agreement. Note that the grammaticality is achieved when the modified element is not the Q<sub>N</sub>, but the noun that follows it:

- (8) Před domem byla spousta (Q<sub>N</sub>) chlapců, kteří se pohybovali  
 in front of house was a lot boysGen which Refl movePast  
 ‘In front of the house there were a lot of boys, who were moving.’

The agreement pattern in (8) is motivated by the lexical noun in the genitive, *chlapců* ‘boys’, rather than by the Q<sub>N</sub> *spousta*. A similar observation can be made for Q<sub>GEN</sub> and Q<sub>A</sub>. In general, the elements of the complex nominal structure marked Q realize a substantially different agreement pattern than those marked N in cases when the whole structure is modified by a relative clause. This example shows that only N

type categories – either semi-lexical group nouns ( $N_Q$ ) or fully lexical nouns – can select a relative clause independently from their following lexical noun.

There are other tests that favour the dichotomy between  $N_Q$  on the one hand and  $Q_N$ ,  $Q_{GEN}$  and  $Q_A$  on the other. For instance, it has been shown that  $N_Q$  has a complex syntactic status, separate from the following N. Both  $N_Q$  and N can have their own sets of demonstratives and/or possessives (Veselovská 2001a: 279):

- (9) Objevila se ta tvoje velká skupina těch našich pěti krásných chlapců.  
 appeared refl [the your big group]Nom [the our five nice boys]Gen  
 ‘There appeared the/your big group of those/our five nice boys.’

(9) comprehensively demonstrates that both the  $N_Q$  *skupina* ‘group’ and the N *chlapců* ‘boys’ can be separately preceded by whole sets of modifying elements (underlined in the structure) such as demonstratives, possessives, quantifiers or cardinals. Similar independence is not found in case of the  $Q_N$  element below:

- (10) Objevila se \*ta/ \*tvoje/ ?velká spousta těch/ našich/ \*pěti krásných chlapců.  
 appeared refl [\*the/ \*your/ ?big plenty]Nom [the/ our/ \*five nice boys]Gen  
 ‘Such a huge amount of those/ our nice boys appeared.’

The  $Q_N$  *spousta* in (10) cannot be separated from its following N by a number of premodifying elements without affecting the grammaticality. This shows, among other things, a greater degree of formal dependency of the  $Q_N$  on the noun it precedes than that found in the case of the  $N_Q$ .

These and similar attributes of the quantifying elements appearing in Czech complex nominal structures show that there are significant differences in the number and character of their semi-lexical status. Importantly, this is equivalent to what has been preliminarily perceived in the behaviour of the V participants in the CVD structure. Veselovská (2001a: 309) summarizes the varying properties of N and Q semi-lexical elements in a final table that is here simplified for the purposes of clarity in the following way:

*Table 1: Some selected properties of N and Q based on Veselovská (2001a)*

The observed property	N <sub>Q</sub>	Q <sub>N</sub>	Q <sub>GEN</sub>	Q <sub>A</sub>
Independent relative clause (examples (7) and (8))	+	-	-	-
Independent quantification of the following N	+	-	-	-
Separate modification of N/Q by elements of category D (examples (9) and (10))	+	-	-	-
The following N can be omitted	+	-	-	+
The elliptically omitted DP in NOM/ACC must be presented by a GEN clitic	-	+	+	-
Semantic Gender	+	-	-	agr.
Formal Gender (non-interpreted)	+	+	-	agr
Q's features trigger V agreement	+	+	±	-

Table 1 demonstrates a gradual loss of nominal (lexical) properties, mostly based on the agreement patterns of Czech N/Q+N complex structure. Whilst our goal is not to follow Veselovská's analysis in its entirety, it is useful to note that the uneven distribution of lexical properties across the several elements of the complex nominal

structures in Czech outlines the graduality of their specification as semi-lexical candidates.

The category  $N_Q$  is closest to the lexical noun<sup>31</sup>, and its semi-lexical characteristics are based purely on its syntactic behaviour, e.g. the role it plays in the complex nominal structure. In contrast,  $Q_N$ ,  $Q_{GEN}$  and  $Q_A$  have lost the majority of the nominal properties and would be positioned closer to the ‘functional end’ on the semi-lexical scale. However, as table 1 suggests, they still retain nominal properties to some degree.

We have seen that a scale understanding of semi-lexicity can answer some important questions about the syntactic differences between semi-lexical candidates. It can also contribute to the explanation of the often unclear and fuzzy borderline between the elements of grammar that have to be considered as purely lexical and those that demonstrate semi-lexical behaviour, either as their defining attribute (Czech modal and aspectual verbs,  $Q_N$ ) or solely by virtue of their entering into specific syntactic structures (Czech  $N_Q$ , German *lassen* ‘let’ in passivized contexts).

In the remainder of the chapter, I will focus on some important factors that play a crucial role in recognizing semi-lexicity in syntactic structures and establishing it as a relevant issue.

## 2.4. Restructuring and semi-lexicity

One of the most important properties of cross-linguistically observed complex verbal structures that signal the semi-lexical behaviour is restructuring. The principle of restructuring was first described within the generative framework by Evers (1975)

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<sup>31</sup> Veselovská (2001a: 273) determines it as an ‘open class’ item.

for Dutch and German, Aissen and Perlmutter (1976) and Rizzi (1976, 1978) for Italian and Spanish.

Restructuring is typical for the complex verbal structure that involves a matrix verb in the finite form followed by an infinitival complement.<sup>32</sup> This structure, identified across different languages, is found also in the Czech CVD. Hence the semi-lexical members of the CVD become candidates for restructuring. For instance, Rizzi (1978) shows that Italian modal verbs (*potere* ‘can’, *dovere* ‘must’, *volere* ‘want’) and aspectual verbs (*cominciare* ‘to begin’, *finire* ‘to finish’, *continuare* ‘to continue’) are restructuring verbs.

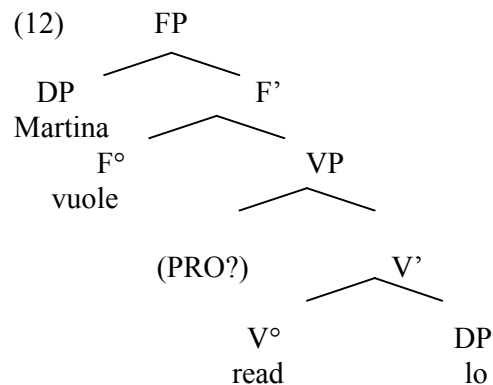
Although the understanding of restructuring underwent changes throughout the development of the theoretical framework, the main motives for this notion remain the same: restructuring is characterized as a rule according to which the embedded infinitive and matrix verb are reanalyzed as a complex verb. By the application of the restructuring rule, a biclausal structure transforms into a monoclausal structure in those cases where the infinitival complement is transparent for processes such as clitic climbing. The following example adapted from Monachesi (1999) demonstrates the situation:

- (11) a. Martina vuole            legger**lo**.  
           Martina want3Sg   readInf clAcc  
           ‘Martina wants to read it.’
- b. Martina **lo**        vuole       leggere.  
           Martina clAcc want3Sg readInf  
           ‘Martina wants to read it.’

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<sup>32</sup> The substantial role of infinitives in the process of restructuring is analyzed in Wurmbrand (2001), who argues for the distinction between lexical and functional restructuring in German. Her monograph also represents a comprehensive analysis of the development of the restructuring concept in the linguistic literature.

(11) involves the Italian V+Vinf structure, in which *vuole* ‘wants’ functions as a matrix verb that selects the embedded infinitive *leggere* ‘read’ as a complement. The structural behaviour of the clitic *lo* ‘it’ plays a crucial role for the restructuring analysis of (11). It originates as attached to the lexical infinitive in (11a), but it can climb over the finite verb in (11b). This supports the hypothesis that *vuole* and *leggere* act as a syntactic unit that has a monoclausal representation similar to that suggested in Wurmbrand (2001: 10):



The notion of restructuring precedes semi-lexicality. Nevertheless, the example above suggests that it is possible to make a link between restructuring and the existence of semi-lexical elements in the complex V+Vinf. The principle of restructuring is attached to certain types of infinitives that lack clausal properties. The notion of the lack of clausal properties is based on the principle of transparency. There is a presupposition that most infinitives constitute a boundary for processes that are restricted to a single clause. Infinitives that trigger restructuring, on the other hand, are thought to be transparent for the same processes, i.e. to lose the ability to



constitute such boundaries. These types of infinitives were observed to participate in the Czech CVD in the previous chapter.

#### 2.4.1. Restructuring in Czech?

There are marked similarities between restructuring and semi-lexical behaviour. The Czech CVD structure, however briefly outlined at this point in terms of its syntactic derivation, appears to be particularly open to restructuring analysis. We have seen in chapter 1 that Czech belongs to those languages rich in infinitival constructions, which are a prerequisite for restructuring. But is a restructuring rule justified in Czech syntax?

Medová (2001) attempts to answer the question and implement the element of restructuring into the generative approach to Czech syntax. She deals with Rizzi's (1978) group of verbs that are cross-linguistically suspect for their restructuring abilities, namely aspectual verbs, motion verbs and modal verbs.

Medová's research is comparative: the well-defined language in terms of restructuring, Italian, functions as a support for her argument. Some of the Italian v. Czech V+Vinf structures are investigated in light of the Romance research tradition involving, above others, the behaviour of reflexive clitics *si* (Italian) and *se* (Czech). The element of Clitic Climbing is here used as a test for restructuring transparency.

Medová's final assumption is that Czech involves both functional restructuring verbs and lexical restructuring verbs. Whilst the infinitival complements of the functional restructuring verbs are transparent for Clitic Climbing, lexical restructuring verbs are not (Medová 2001). Moreover, certain verbs with a single

phonetic form can involve both functional and lexical restructuring. The ambiguity is shown in the following pair of examples (adapted from Medová 2001: 91):

(13) a. Včera jsem chtěla udělat to dneska.  
yesterday Aux1Sg want1SgPast do itClAcc today  
'Yesterday, I wanted to do it today.'

b. \* Včera jsem to chtěla udělat dneska.  
yesterday Aux1Sg itClAcc want1SgPast do today  
'Yesterday, I wanted to do it today.'

The data in (13) involve multiple temporal adverbs to distinguish between functional and lexical restructuring. Since two temporal adverbs cannot normally co-occur in a single clause, only a bi-clausal interpretation of (13) yields a grammatical structure.

There is no Clitic Climbing in (13a) – the clitic *to* 'it' remains below the infinitive *udělat* 'do'. Assuming that the phenomenon of Clitic Climbing can be used as a valid diagnostics for infinitival transparency, this shows that (13a) does not involve a transparency effect and its structure is bi-clausal. This in turn results in grammaticality as both temporal adverbs are present in two different clauses, and (13a) entails lexical restructuring.

On the other hand, the clitic climbs over the V+Vinf structure in (13b), signalling that the infinitive is transparent for Clitic Climbing. In this case, Rizzi's restructuring rule is in place: (13b) attains a mono-clausal interpretation and restructuring has a functional character. Consequently, ungrammaticality is achieved as both temporal adverbs now co-occur in the same clause.

In accordance with Cinque's framework of functional heads' hierarchy in the structure, Medová assumes that Czech functional restructuring verbs are functional

heads entering in the projection of the relevant lexical verb (Cinque 2000). In the case of functional restructuring verbs, we get the mono-clausal derivation structure.

On the other hand, lexical restructuring verbs are not functional heads. Since they are capable of entering structures that do not show transparency effects, they project as lexical verbs. In this case, the derivation presumes the bi-clausal construction (Medová 2001: 101-106).

Whilst Medová does not focus solely on the group of Czech modal verbs<sup>33</sup>, her findings are intriguing, showing us that there indeed may be a link between mono-clauzality and “real” restructuring in Czech, and we have to consider seriously restructuring within our system. However, many unanswered questions remain (Medová 2001: 106), and there are still the problems that we encountered before, related to the whole restructuring concept.

Firstly, I am not convinced that Clitic Climbing is a good test. The problem is caused by the fact that the whole issue of clitics in Czech is vastly complicated,<sup>34</sup> to the extent that some of the processes in Czech syntax involving clitics are either not clear enough to be identified as Clitic Climbing, or can be a result of some additional

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<sup>33</sup> Where she does, her deliberation on what members constitute this group is highly disputable. For instance, she mentions *přát si* ‘wish, desire’, *použít* ‘use’, *zkoušet* ‘try’, *odvážít se* ‘dare’, *vědět* ‘know’, *přestat* ‘finish’ etc. as modal verbs (Medová 2001: 34). There is a confusion as to the border line between modal verbs and aspectual verbs, as well as an unnecessary attempt to categorize individual verbs such as *zkoušet* ‘try’ and *odvážít se* ‘dare’ into larger groups whilst they are showing idiosyncratic behaviour towards restructuring. In Wurmbrand’s (2000) sense, whilst modal verbs and aspectual verbs are the core of restructuring, the other verbs mentioned here are less straightforward examples of restructuring.

<sup>34</sup> The literature on the subject is plentiful. Within the generative framework, Franks & King’s (2000) compilation includes a comprehensive guide to clitics in the Slavic environment. The clitic phenomena in Czech were first analyzed within the generative syntax in George & Toman (1976). Of the more recent approaches, Toman (1986), Avgustinova & Oliva (1995, 1997), Oliva (1998, 2001), Junghanns (2002) and Řezáč (2005) offer a useful formal account of clitics and their behaviour in Czech syntax. From the perspective of the clitic climbing (CC), Lenertová (2004) and Dotlačil (2006) show why Czech clitics cannot move over the CP boundary (A-movement), whereas full NPs can (A-movement).

rules, such as Wackernagel's (1892) second position.<sup>35</sup> Consider the problematic data in (14):

- (14) a. Jan      mu            to musel            říct      dvakrát.  
           Jan<sub>i</sub>    himCl<sub>j</sub>/\*<sub>i</sub> itCl must3SgPast sayInf twice  
           'Jan had to tell it to him twice.'
- b. \*Jan      mu            musel            říct    to    dvakrát.  
           Jan<sub>i</sub>    himCl<sub>j</sub>/\*<sub>i</sub> must3SgPast    sayInf itCl twice  
           'Jan had to tell it to him twice.'
- c. \*Jan      to    musel            říct    mu            dvakrát.  
           Jan<sub>i</sub>    itCl must3SgPast    sayInf himCl<sub>j</sub>/\*<sub>i</sub> twice  
           'Jan had to tell it to him twice.'
- d. \*Jan      musel            říct    mu to/            to mu            dvakrát.  
           Jan<sub>i</sub>    must3SgPast sayInf himCl<sub>j</sub>/\*<sub>i</sub> itCl // itCl himCl<sub>j</sub>/\*<sub>i</sub> twice  
           'Jan had to tell it to him twice.'

The example (14) contains a clitic cluster *mu to* 'him it'. The ordering rules of the clitics within the clitic cluster put aside, (14) represents an array of syntactic positions that cause ungrammaticality if occupied by a clitic. This would strongly suggest that (14) can have only a mono-clausal interpretation and that Clitic Climbing is obligatory. However, the fact that (14b-14d) are ungrammatical casts doubt on the Clitic Climbing process as a catalyst for restructuring. As (14a) shows, the clitic cluster *mu to* 'him it' has to occupy the second position in the structure, in accordance with the Wackernagel rule. The question that arises here is: how did it get there? If it

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<sup>35</sup>See Wackernagel (1892). Similarly problematic is the process during which the reflexive *se* loses an argument status in favour of its affixation throughout the historical development of Czech.

occupies the Wackernagel position as a result of Clitic Climbing, why is its original position that it presumably moves from ungrammatical?

If there is indeed ambiguity between functional and lexical restructuring in Czech, it is curious that the lexical restructuring (and bi-clausal interpretation) is ruled out in (14). It appears that Czech, unlike Italian, allows structures with clitics or a clitic cluster only in the second position. This argument complicates Clitic Climbing as a relevant evidence for restructuring.

It appears that although restructuring has been established as a strong property of semi-lexical verbs such as modals, it is problematic to analyze it as an actual syntactic process taking place in the Czech CVD structure. It would be more appropriate to find other “non-clitic” types of tests mirroring the situations in Romance and Germanic to broaden the evidence, but as noted by Medová, it is difficult.

Furthermore, Medová’s approach towards the difference between functional and lexical restructuring is put to the test when we encounter multiple infinitival constructions in Czech, which are, obviously, at the centre of our attention. Let us consider the following data:

- (15)a. Úplně přestal chtít kouřit svoji dýmku.  
completely stop3SgPast wantInf smokeInf hisAcc pipeAcc  
‘He completely stopped wanting to smoke his pipe.’

- b. Chtěl přestat kouřit svoji dýmku skoro každý pondělí.  
want3SgPast stopInf smokeInf hisAcc pipeAcc almost every Monday.  
‘He wanted to stop smoking his pipe almost every Monday.’

c. ?Úplně ji přestal chtít kouřit.  
 completely itClAcc stop3SgPast wantInf smokeInf  
 ‘He completely stopped wanting to smoke it.’

d. Vždycky v pondělí ji chtěl přestat kouřit.  
 always in Monday itClAcc want3SgPast stopInf smokeInf  
 ‘He always wanted to stop smoking it on Monday.’

(adapted from Medová 2001: 103)

The data in (15) show interesting combinatory properties of potentially restructuring members of a larger CVD. Medová’s aim here is not dissimilar to our own: to find out how the respective properties of aspectual, modal and motion verbs enable them to combine within Czech multiple infinitival structures. However, she assumes Cinque’s hierarchy of functional heads above the VP, whilst the goal of this thesis is to propose a unique, large V domain that would organize its own hierarchy by applying the rules of vP derivation.<sup>36</sup>

Medová suggests that the restructuring aspectual verb *přestat* ‘to stop’ is lower in the hierarchy of the functional heads than the restructuring modal *chtít* ‘want’, in accordance with the perceived hierarchical rule positioning aspectual verbs below modals. It is indeed the case in (15b) that *chtít* precedes *přestat* and the sentence is well formed.

The predefined hierarchy of functional heads would then rule out (15a) as ungrammatical. Nevertheless, (15a) is a perfectly well formed Czech sentence. This creates a serious problem for Cinque’s hierarchy. Medová tries to solve it by an ad hoc assumption that *přestat* ‘to stop’ is in fact a lexical verb, not functional. This, however, means that the structure (15a) is bi-clausal rather than mono-clausal. The

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<sup>36</sup> See 6.3.2.

question mark next to (15c) then shows that the bi-clausal character of structures where *přestat* precedes *chtít* ‘want’ makes Clitic Climbing more problematic.

The analysis of the data in (15) yields one rather difficult conclusion: the different hierarchy between members of the V+Vinf constructions causes a switch between their mono-clausal and bi-clausal status. In Medová’s terminology, Czech restructuring verbs are both functional and lexical heads depending on the contexts they enter.

We have seen that such contexts can indeed be quite extensive, involving several types of semi-lexical verbs that could be viewed as restructuring triggers. I believe that data containing modals as well as aspectual verbs in one large multi-infinitive domain urge us to find another, simpler and more elegant solution to their hierarchy issues.<sup>37</sup>

## 2.5. Defective argument structure – ‘light verb’ interpretation of semi-lexical verbs

I have shown in section 2.2. that an underspecified argument structure is one of the crucial factors in labeling a verb as semi-lexical. The remainder of the chapter will analyze the way in which a semi-lexical element is ‘light’ by virtue of sharing its argument structure with the following infinitival complement.

The notion of semi-lexicity collides with the widespread notion of the *light verb*. There is a broad interest in light verb phenomena in syntactic literature from

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<sup>37</sup> Sentences like *Petr musí chtít přestat kouřit marihuanu* ‘Petr must want to stop smoking marihuana’ involve too many combinatory options etc.

different perspectives<sup>38</sup>, often causing confusion and ambiguity in the use of the terminology. Generally, there are two types of approach towards this issue.

Approaches that emphasize the formal definition of the light verb as an empty syntactic category (Chomsky 1999) deny its semi-lexical status, whereas approaches working from the semi-lexical perspective confirm that there is a close link between light verbs and semi-lexicality (Butt & Geuder 2001: 323-371).

Next to restructuring, the existence of light verb constructions is another phenomenon that has led to the host of theories claiming that the verbal projection is probably more complex than previously thought<sup>39</sup>.

The notion itself has a long tradition in English grammar.<sup>40</sup> Since Jespersen (1965), the theory of light verbs has been developed and modified. The expansion went in two directions. It has been pointed out that some verbs show similar degrees of ‘lightness’ in other languages, some fairly distant from English, and that light verbs can be found in other than V+N structures. For instance, both elements are present in the discussion about Japanese (an OVS language) *suru* ‘do’ N+V structures (Grimshaw and Mester 1988, Saito and Hoshi 2000), Romance ‘make’ V+V structures (Rosen 1989) Hindi N+V structures (Mohanan 1994) and Urdu V+V structures (Butt 1995).

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<sup>38</sup> See Butt (2003), who uses the term ‘jungle’ in her analysis of the status of light verb phenomena in the syntactic literature.

<sup>39</sup> Rosen (1990) makes an interesting link between light verbs and restructuring, claiming that restructuring verbs are in fact light verbs.

<sup>40</sup> The fact that some lexical verbs can become ‘light’ in certain syntactic contexts was originally noted by Jespersen (1965; Volume VII). The data quoted most frequently are V+N structures *have a rest/ a read/ a cry/ a think, take a sneak/ a drive/ a walk/ a plunge* and *give a sigh/ a shout/ a shiver/ a pull/ a ring*. The intuition behind the term ‘light’ is that the italicized verbs, although seemingly taking standard N complements, in fact do not fully predicate (Butt 2003; 1).



### 2.5.1. Realization of the argument structure in light verb constructions

The specific properties of argument selection distinguish the small group of light verbs from other verbs in English. Crucially, it appears that the verbs entering the light verb structure can also have a fully lexical status in other structures.<sup>41</sup> Consequently, there is an ambiguity between ‘light’ and ‘heavy’ characteristics of English verbs such as *take*, *have* and *give*.

To eliminate the ambiguity, Catell (1984) suggests that the information on whether a verb is light or heavy is encoded in the lexicon. Let us see how it works on the example below:

- (16) a. I'll take a ball into the park.  
b. I'll take a walk into the park.

While *take* is a fully lexical verb in (16a), it becomes a light verb in (16b) by selecting a verbal noun as its complement. In both cases, *take* has a distinctive argument structure. The difference is caused by the fact that nominal complements of light verbs share the predication power with them – they are able to participate in the predication of the whole N+V structure.

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<sup>41</sup> It seems that being ‘light’ is secondary, rather than the defining attribute amongst the group of English semi-lexical verbs. For instance, Anna Wierzbicka (1982) points out the polarity:

- (i) a. have something to drink  
b. have a drink  
  
c. have something to eat  
d. \*have an eat

Wierzbicka asks why we cannot say ‘have an eat’ when we are able to say ‘have a drink’. The situation above is caused by the idiosyncrasies of the English lexicon. Whilst there is a nominal lexical entry for drink, N (= anything drinkable/an alcoholic drink), there is no such nominal entry for \*eat, N (= anything edible). Obviously, light verbs can take only nouns for a complement, which rules the light verb construction out.

The data in (16) support the idea that there is a separate lexical entry for light *take* and another lexical entry for ‘heavy’ *take* in English lexicon. They are outlined in (17) below:

- (17) a. take, V, \_\_NP<sub>+PRED</sub>  
 b. take, V, \_\_N(+N, +V) <sub>-PRED</sub>

The feature +PRED in (17) is based on Emonds’ (2000) definition of cognitive syntactic features. I assume that +PRED is present when the verb indeed has a light status.

Cattell (1985) was the first to introduce argument structure into the research on English light verbs and point out their importance. He proposes a fusion of the argument structures of both a light verb and its complement. The fusion is reflected by the complex lexical entry of the whole V+N structure. It has the following character in the case of the English sentence *Harry made the police an offer of money*:

- (18) Lexical entry for *make an offer*  
 MAKE..... [AN] OFFER  
 MAKE:      THEME (?)  
                   (N", V')  
 OFFER    'R              GOAL  
                   (N", X')        (PP, X')  
                                   (N"1, V')<sup>42</sup>

The issue of the joint argument structure in the light verb construction leads to questions regarding its impact on  $\theta$ (theta)-theory, which has been an important part of

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<sup>42</sup> Catell (1984: 55)

verbal syntax since Chomsky (1981, 1986). In its simple form,  $\theta$ -theory assumes that every verb (and only a verb) is able to assign a  $\theta$ -role (such as AGENT and GOAL) to the arguments it selects, and that this process (also known as  $\theta$ -marking) is subject to strict rules, such as  $\theta$ -Criterion.<sup>43</sup>

Grimshaw & Mester (1988) suggest that there are specific factors influencing the  $\theta$ -role assignment within the joint argument structure of the Japanese N+V light verb complex, namely  *$\theta$ -transparency* and *argument transfer*. Light verbs are defined as (verbal) elements that can only occur with  $\theta$ -transparent NPs.<sup>44</sup> In normal conditions, argument NPs are opaque to  $\theta$ -marking.<sup>45</sup> Opacity means that whilst the NP can be an argument of a verb, it cannot contain an argument of a verb. However, this statement is debatable and creates confusion for the analysis of light verb structures. This is due to the fact that there are lexical verb constructions with clearly identifiable arguments of NPs, such as the one represented in (19) below:

(19) It was [<sub>NP</sub>walks *in the park* <sub>argument</sub>] that John and Mary liked.

The sentence (19) suggests that any nominalized verb, regardless of whether it is a part of light verb structure or not, can have NP arguments.

According to Grimshaw & Mester (1988), whenever the NP contains an argument of the verb, as is common in the light verb structure, transparency is

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<sup>43</sup> See Chomsky (1981).  $\theta$ -Criterion ensures that every  $\theta$ -role assigned by a verb is realized by an argument, and that there are no arguments with more than one  $\theta$ -role. The principle of  $\theta$ -role assignment in the light verb structure motivates a modification of the  $\theta$ -Criterion, attempted first by Catell (1984). Since then, the discussion about the issue has changed with the major alterations to the syntactic framework, and we will see further how it loses relevance in the minimalist account of the light verb phenomenon.

<sup>44</sup> Lexical verbs, on the other hand, can only take  $\theta$ -opaque objects. See Grimshaw & Mester (1988: 207).

<sup>45</sup> Chomsky (1981)

created. The difference between opacity and transparency is formally described as follows:

- (20) a. [V NP]VP  
 b. [V [.....NP....]NP]VP  
 c. [....NP.....[N]NP.....NP.....]VP<sup>46</sup>

θ-marking is possible in (19a) but not in (19b) because a verb cannot assign its θ-role to the second (object) NP due to the interfering NP. Also (19c) is ruled out because the head of an NP does not assign a theta-role outside its maximal projection. Therefore, (19a) is a “normal” θ-opaque structure, whereas (19b) and (19c) are θ-transparent structures.

Grimshaw & Mester argue that the Japanese light verb *suru* ‘do’ allows θ-marking in θ-opaque structures:

- (21) John-wa Mary-ni HANASHI-o shita.  
 John-Top Mary-to talk-Acc suru  
 ‘John talked to Mary.’

The argument array of the sentence in (21) is dependent on the noun heading the direct object. It is important that *suru* itself has no influence on the number and type of arguments. The argument array is licensed by the argument structure of the Noun that occurs with *suru* in the light verb structure, even if the arguments occur outside the NP violating the θ-opacity rule. *John* and *Mary* are arguments of *hanashi* ‘talk’, which assigns them their theta-roles, possibly <Agent> and <Goal>, outside its maximal projection. The object NP headed by the θ-role assigning noun *hanashi* is

<sup>46</sup> Grimshaw and Mester (1988: 207).

not an argument and therefore must be licensed in some other way. This is achieved by argument transfer.

Argument transfer plays an important part in the (re)distribution of  $\theta$ -roles in the following Japanese example:

- (22) John-wa murabito-ni [ookami-ga kuru-to] KEIKOKU-o shita.  
John-Top villager-to wolf-Nom come-Comp warn-Acc suru  
'John warned the villagers that the wolf was coming'.

It is a process that counters the violation of the  $\theta$ -criterion by giving a  $\theta$ -marking ability to the light verb *shita*. There are two versions of the argument transfer in (22). The first one creates a joint  $\theta$ -role assignment by a light verb *suru* and its complement:

- (23) a. *keikoku* = 'warning' (Agent, Goal, Theme)  
b. *suru* ( ) <acc>  
c. *keikoku* (theme) + *suru* (Agent, Goal) <acc>

(23a) and (23b) represent the inputs to Argument Transfer; (23c) is the result of the transfer process – the pair of lexical items that must appear together.

The second version of the argument transfer creates the situation where *suru* absorbs all arguments. In this case, the process has a different result from the same input:

- (24) a. *keikoku* (Agent, Goal, Theme)  
b. *suru* ( ) <acc>  
c. *keikoku* ( ) + *suru* (Agent, Goal, Theme) <acc>

The result of the argument transfer is a pair of linked lexical items (Noun-Verb complex in Japanese *suru* constructions) that undergoes a single lexical insertion in the process of derivation. With this claim, Grimshaw and Mester (1988) assume Catells' (1984) strict lexicalist position in answering the question of whether the Noun-Verb complex forms the complex predicate in the derivation or whether it is inserted into the syntactic structure as such.

However, the lexicalist hypothesis has been abandoned in view of the current development of generative syntactic theory. Saito & Hoshi (2000) argue against the descriptive status of the pre-minimalist notion of argument transfer. Since it was proposed solely for light verb structures, they try to eliminate its need (Saito and Hoshi 2000; 273) from the theory. Instead of lexicalist explanations, they suggest the LF incorporation analysis.<sup>47</sup>

Once the minimalist program is adopted, a completely new analysis of light verbs follows. Hoshi & Saito claim that the processes responsible for the complex argument structure in light verb constructions are an example of Last Resort processes in syntax. Accordingly, they show that LF is responsible for the way in which a light verb gains its ability to assign  $\theta$ -roles. The point is illustrated as follows:

- (25) Mary-ga            John-ni/[<sub>NP</sub>-e    toti-no    zyooto]-o    sita.  
       Mary-NOM    John-to/-to        land-GEN   giving-ACC   did  
       'Mary gave a piece of land to John.'

(Saito and Hoshi (2000: 278))

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<sup>47</sup> When suggesting a different solution, Saito & Hoshi take advantage of the substantially lesser importance of  $\theta$ -role assignment in the minimalist syntax. With the elimination of the old D-Structure from syntax, the traditional assumption that all  $\theta$ -roles are obligatorily assigned already at D-Structure loses its value. Therefore, the motivation for the lexicalist explanation of the argument structure of light verb structures no longer exists.

In (25), the  $\theta$ -role assigning noun *zyotoo* ‘giving’ has the potential of theta-role assignment – a necessary condition for being a complement of a light verb prior to the Spell-Out and LF. Before Spell-Out takes place, *zyotoo* assigns its Theme role within the direct object NP, then rises to the position of the verb *su* in LF and discharges both its Goal and Agent theta roles (Saito and Hoshi 2000: 268).

We can see that the reasoning behind the principle of argument transfer has changed from the lexicalist interpretations (Catell 1984, Grimshaw & Mester 1988) to those advocating the explanation at the later level of language representation. The LF hypothesis solves most of the old problems caused by the rules applied to  $\theta$ -role assignment, such as  $\theta$ -Criterion<sup>48</sup>. The advantage of LF theory is that it focuses on the structural attributes of the complex argument structure shared by a light verb and the verbal noun without having to explain its effects on the  $\theta$ -grid earlier in the derivation.

### 2.5.2. Light verbs in Czech?

The situation in Czech regarding the existence of light verbs is more complicated. There are certain candidates here that seem to be entering structures similar to English *take a walk*. However, I am not sure that the analogy with English is correct. The examples are too few and specifically related to the stylistic process of creating multi verb phrases:

- (26) a. Dali                      mi                      povolení                      chytat                      ryby  
                  givePAST3PL   1SgDAT   permissionACC   catchINF   fishACCPL  
                  ‘They gave me permission to fish.’

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<sup>48</sup> See chapter 6.

b. Povolili                      mi            chytat            ryby.  
       permitPAST3SG   1Sg DAT   catchINF       fishACCPL  
       ‘They allowed me to fish.’

(26a) represents a potential V+N structure [*dát povolení*] ‘give permission’ as opposed to the single verb *povolit* ‘permit/allow’. These structures are scarce and not as convincing as their English counterparts. It would need a longer investigation to assess whether the verb and its nominal complement form the complex predicate. As of now, it seems that the difference between (26a) and (26b) is merely stylistic.

Furthermore, the nominal complement of the verb in these structures is always followed by an infinitive, which gives us an indication that we could really deal with the regular bi-clausal structure rather than a complex predicate. The infinitive [*chytat ryby*] ‘to fish’ would then involve an empty PRO category in its subject position. The good validity test for this explanation is that the infinitive can be substituted by a relative clause in (27):

(27) Dali                      mi<sub>i</sub>            povolení, CP že PRO<sub>i</sub> můžu    chytat    ryby  
       givePAST3PL   1SgDAT   permissionACC   that   1Sgcan catchINF   fishACCPL  
       ‘They gave me the permission that I can fish’.

The above structure involves *dát* ‘give’ as a fully lexical verb with the object complement *povolení* ‘permission’. Therefore, the modification by a relative clause suggests that *povolení* ‘permission’ is a simple nominal complement of *dát* ‘give’ also in the original example (26a) and the infinitive group *chytat ryby* ‘to catch fish’ has the role of the modifying phrase with inner clausal structure.

Although there is little evidence that Czech verbs such as *dát* ‘give’ behave like light verbs in the V+N predicate structure, the general concept of the light verb is



still relevant for our understanding of the semi-lexical status of the verbs participating in Czech CVD (V+V predicate structure). This is due to the fact that has just been established above, i.e. that the principle of argument transfer is one of the most important universal attributes of semi-lexical elements taking part in the predication. As will be shown further<sup>49</sup>, Czech modal verbs have an underspecified argument structure and share their  $\theta$ -role assignment with the lexical infinitive. From this point of view, they can be called ‘light’. However, there is a theoretical confusion regarding the term ‘light verb’. Note that ‘light verb’ is not a simplified label for a verb with semi-lexical properties in the minimalist syntax, but a specific, empty syntactic position in the structure (Chomsky 2001). I will adapt the minimalist approach in chapter 6 and argue that there is a light verb position in the structure for derivation of Czech modal verbs. Henceforth, ‘light verb’ is understood as a structural (abstract) rather than a defining notion of the group of modals in Czech. Its old, broader meaning is replaced by the term ‘semi-lexical’.

## 2.6. Summary and conclusions

This chapter has analysed the position of the theory of semi-lexicity in generative syntax and established what is meant by ‘having a semi-lexical status’ in the thesis. We have noticed that there are a few factors that play a crucial role in the semi-lexical diagnostics, such as restructuring behaviour and presence of the argument transfer.

Moreover, I have suggested a couple of theoretical presumptions that form the basis of our investigation of Czech CVD structure: that there is not a third category in

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<sup>49</sup> See chapter 6. The issue reappears in chapter 8, discussing the difference between epistemic and root modality in the lexicon.

syntax on a par with functional and lexical categories and that semi-lexicality is best interpreted by a scale approach as a gradual loss/gain of the number of functional/lexical properties. The former argues that semi-lexical verbs in Czech are derived from either lexical or functional verbs, whilst the latter accounts for syntactic differences between the semi-lexical members of the CVD.

## Chapter 3

### *Semi-lexical characteristics of Czech modal verbs*

### 3.1. Introduction

In the previous two chapters, I established the central issue to be addressed in the thesis and the main research questions formulated in order to tackle this issue. I proposed the CVD structure for the Czech multi verbal clause containing an infinitive cluster and showed that modal verbs participate in such a structure.

We have seen that there is a strong motivation for having semi-lexical syntactic elements within the Czech CVD. In fact, the specific syntactic character of the semi-lexical items of category V in Czech enables the construction of the CVD. I assume that wherever there is a semi-lexical element in a Czech VP, such a phrase automatically qualifies as a CVD. I further assume that the CVD is a monoclausal structure. The theoretical assumption regarding Czech modals is summed up as follows:

- (1) a. Modal verbs are primary V candidates for semi-lexicity.
- b. They play a central role in the forming of the CVD in Czech.

This chapter advocates the fact that Czech modal verbs are semi-lexical.<sup>50</sup> Prior to analyzing them strictly in terms of their insertion into the syntactic derivation and the part they play in the CVD, it offers an account of first the lexical, then the functional, behaviour of Czech modals. The aim of this account is to set them apart from both the category of *true auxiliaries* and that of full lexical verbs, treated classically as heads of simple, singular VPs.

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<sup>50</sup> The situation in (1b) is closely analysed in chapter 6.

Firstly, I will analyze the lexical attributes of Czech modals that are shared with, or at least widely similar to, properties of fully lexical verbs (section 3.2.). Then the focus will shift towards the strong functional behaviour of Czech modal verbs, which brings them closer to pure functional categories (section 3.3). The chapter will conclude by noting some irregularities in lexical/functional behaviour (section 3.4.). This will prepare the ground for distinguishing two semi-lexical types of Czech modal verbs in chapter 4.

### 3.2. Lexical properties of Czech modal verbs

In accordance with the definition of semi-lexicality in chapter 2, I argue that modal verbs retain the core lexical properties typical of Czech verbal morphosyntax. The following data prepares the argument:

- (2) a. Jan bude studovat lingvistiku.  
 Jan AuxFut3sg studyInf linguisticsAcc  
 ‘Jan will study linguistics.’
- b. Jan bude muset studovat lingvistiku.  
 Jan AuxFut3sg mustInf studyInf linguisticsAcc  
 ‘Jan will have to study linguistics.’

The example (2a) contains a lexical verb *studovat* ‘study’ in the analytical future tense form.<sup>51</sup> In this case, we deal with a simple VP [studovat lingvistiku], of which

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<sup>51</sup> Czech modal verbs have basically two options regarding the expression of the future tense. Firstly, they form the analytical/periphrastic future tense by addition of the auxiliary ‘be’ in the future tense form. The process of adding the auxiliary, covered by our example in (2), is the more frequent option. Secondly, the simple present tense form of the modal also has the ability to signal a future tense

*studovat*, despite being in the infinitive, functions as the obligatory head. The auxiliary *bude* is, in accordance with Czech morphosyntax, able to attain gender affixes to assure agreement with the nominal subject *Jan*. However, being a strict tense auxiliary (auxiliary morpheme), it will occupy the head of a larger phrase (called IP after Chomsky 1986). Thus in (2a), VP is the complement of *bude*. The sentence structure will then assume the following form: Jan [<sub>IP</sub> bude [<sub>VP</sub> studovat lingvistiku]].

The example with the modal in (2b), on the other hand, contains the CVD structure [*muset studovat lingvistiku*]. In chapter 6, I will argue that the CVD in (2b) is syntactically a semi-lexical verb phrase (vP) with the leftmost non-auxiliary verb (*muset*) occupying its head. The complement of *muset* is the VP [*studovat lingvistiku*]. The sentence structure in (2b) then appears as follows:

(3) Jan [<sub>IP</sub> bude [<sub>VP</sub> muset [<sub>VP</sub> studovat lingvistiku]]].

I have suggested that a CVD is to be specified as a single domain that can potentially contain multiple V appearances, rather than a succession of fully projected multiple VPs. The data in (2) clearly shows the similarities between the CVD and the simple VP in respect of assuming the analytical future tense form. Therefore, if they both enter the same structure to express the future tense, they have to share some lexical properties.

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interpretation in certain contexts, predominantly but not necessarily when the temporal adverb is also present, such as

- (i) Zítra už může být pozdě.  
tomorrow already can3Sg beInf late  
'It may be too late tomorrow.'

Esvan (2005) presents a corpus analysis of the concurrency of the future (analytical) and simple present tense form in expressing future meaning of modal structures. The investigation is conducted on the general background of the dichotomy between analytical future and present in expressing the future in Czech (Esvan 2004).

The following sub-sections deal with the lexical properties retained by Czech modal verbs.

### 3.2.1. Rich morphological paradigm

One of the most important pieces of evidence showing that Czech modal verbs share fundamental properties with fully lexical verbs can be found in their morphology. This section compares the main morphological paradigms of a modal *muset* ‘must’ and a lexical verb *spát* ‘sleep’ in present, past and future tense structures and demonstrates that they show remarkable similarities.

Czech modal verbs make the same use of suffixes for distinguishing gender, person and number as fully lexical verbs do. For the purpose of clearer demonstration, I summarize the person and number suffixation alone whilst using the present tense morphological paradigm only.

The distinction between the present tense paradigm of Czech modals on the one hand and the past and future paradigms on the other hand is morphologically significant. Whilst in the former case we deal with the circumstances of morphemes smaller than a word, the latter contains occurrences of word morphemes.<sup>52</sup> However, both kinds of morphemization play identical roles in constructing the relative paradigms. Consider now the present tense active paradigm of modal *muset* ‘must’, compared to full verb *spát* ‘sleep’ in the following table:

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<sup>52</sup> The example of a morpheme in the present tense paradigm is the 1<sup>st</sup> person suffix *-ím* in *musím* ‘I must’. The example of the word morpheme is the auxiliary. In this case, the auxiliary has the role of the word suffix. It is a question of whether there is a clear difference between both types of morphemes, or whether the distinction is vaguer. In the data (3), both morpheme types cooperate in the forming of the analytical future tense.

Table 1. The morphological paradigm in the present tense structures

	muset ‘must’	spát ‘sleep’
1SG	musím ‘I must’	spím ‘I sleep’
2SG	musíš ‘you must’	spíš ‘you sleep’
3SG	musí Ø ‘he/she/it must’	spí Ø ‘he/she/it sleeps’
1PL	musíme ‘we must’	spíme ‘we sleep’
2PL	musíte ‘you must’	spíte ‘you sleep’
3PL	musí/musejí Ø ‘they must’	spí Ø ‘they sleep’

The above table represents the simple present tense form. As such, it demonstrates the modal attaining suffixes responsible for both tense and person/number distinction. The present tense suffix is italicized, whilst the person/number suffixes are emphasized in bold. It is apparent from the table that the modal *muset* ‘must’ uses the same suffixes as the full verb *spát* ‘sleep’.

Czech modal verbs always agree with the subject of the clause. The presence of agreement suffixes such as person and number on both the modal and the fully lexical verb enables the subject to be dropped eventually, which is one of the most researched parameters of Czech language.<sup>53</sup>

Table 1 represents a paradigm that uses suffixation. However, paradigms can also involve complete words as specific types of affixes. We have seen this in (2), which contain the analytical tense form. The two paradigms that follow are similar in that they contain a combination of in-word suffixation and word morphemes.

<sup>53</sup> See Franks (1995), Veselovská (1995).



Firstly, I will concentrate on the analytical past tense. In general, Czech modal verbs take the auxiliary *být* ‘be’ to form the analytical past tense just like any other full verb. The past tense paradigm showing the usage of the auxiliary *být* ‘be’ as a candidate for an auxiliary suffix is as follows:

*Table 2. The morphological paradigm in the past tense structures*

	muset ‘must’	spát ‘sleep’
1SG	musel/-la/-lo <b>jsem</b> ‘I had to’	spal/-la/-lo <b>jsem</b> ‘I slept’
2SG	musel/-la/-lo <b>jsi</b> ‘you had to’	spal/-la/-lo <b>jsi</b> ‘you slept’
3SG	musel/-la/-lo (Ø) ‘he/she/it had to’	spal/-la/-lo (Ø) ‘he/she/it slept’
1PL	museli/-ly/-la <b>jsme</b> ‘we had to’	spali/-ly/-la <b>jsme</b> ‘we slept’
2PL	museli/-ly/-la <b>jste</b> ‘you had to’	spali/-ly/-la <b>jste</b> ‘you slept’
3PL	museli/-ly/-la (Ø) ‘they had to’	spali/-ly/-la (Ø) ‘they slept’

The modals in Table 2 receive their past tense morphology through the combination of two features: firstly, they employ *-l-* suffix in the same way full verbs do in order to check the past tense features. The tense suffix in this case appears in bold. Secondly, the modal attracts the ‘be’ auxiliary as an equivalent of a word suffix. The main role of the post-verbal auxiliary ‘be’ (also emphasized by bold letters in the table) is to distinguish 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> person respectively. Since it does not function as a tense marker in itself, but cooperates in forming the analytical tense form, it appears in the strictly unmarked present tense form.

The analytical past verbal forms in Czech are also specific in that they, unlike the rest of the tense forms, can also contain suffixes specifying the grammatical

gender apart from person/number. For example, *musel* is masculine, *musela* feminine and *muselo* neuter. As for agreement features, their strong presence here also enables the subject to be dropped.

As an example of the table above, consider now these past tense structures in (4) containing first the simple lexical verb, then a CVD with both modal and a full verb present:

- (4) a. Četl                      jsem              tu      knihu.  
          readMasPast   be AUX1Sg   that   bookAcc  
          ‘I read/have read that book.’
- b. Musel                      jsem              číst        tu      knihu.  
          mustMasPast   beAUX1Sg   readINF       that   bookAcc  
          ‘I had to read that book.’

It is apparent that the mechanism of attaining the combined past tense morphology is principally the same in both lexical and modal verb occurrences. As the modal plays a crucial role within the CVD, it forms the analytical past tenses in the same way as fully lexical verbs do.

The third paradigm that is relevant for our argument is the analytical future tense that has already been demonstrated in (2). The ability of Czech modal verbs to form the analytical future tense has consequences similar to those that we have observed in the analytical past tense structures. However, there are important differences, which, although not affecting the main argument, nevertheless generate some interesting questions. These concern specifically the character of the future tense ‘be’ auxiliary and the difference between expressing the future by the analytical tense form and by the use of aspectual affixes.

The important pro lexical argument here is again based on the fact that Czech modal verbs take the auxiliary *byť* ‘be’ to form the analytical future tense just like any other full verb. As with the previous two instances of the morphological paradigms, let us present the table first:

*Table 3. The morphological paradigm in the future tense structures*

	muset ‘must’	spát ‘sleep’
1SG	<b>budu</b> muset ‘I will have to’	<b>budu</b> spát ‘I will sleep’
2SG	<b>budeš</b> muset ‘you will have to’	<b>budeš</b> spát ‘you will sleep’
3SG	<b>bude</b> muset ‘he/she/it will have to’	<b>bude</b> spát ‘he/she/it will sleep’
1PL	<b>budeme</b> muset ‘we will have to’	<b>budeme</b> spát ‘we will sleep’
2PL	<b>budete</b> muset ‘you will have to’	<b>budete</b> spát ‘you will sleep’
3PL	<b>budou</b> muset ‘they will have to’	<b>budou</b> spát ‘they will sleep’

As expected, Table 3 shows that the future tense paradigm found in Czech modals is complete and identical to that of fully lexical verbs. Generally, the analytical future tense structure is different from the past one in the way the auxiliary precedes the verb, which uniquely gains the infinitive form. Because it is in the infinitive, the modal here cannot take any further tense or agreement suffixes, making the auxiliary a sole receiver of agreement and tense morphology. As with the past form, the presence of the ‘be’ auxiliary itself accounts for the future tense, which is marked in bold. However, there is no secondary tense suffix on the modal. The agreement features of person/number are, moreover, carried by the auxiliary and are italicized in the table.

Interestingly, all this sets the future form of the ‘be’ auxiliary apart from its other instances (past *jsem*, conditional *bych*, *byval* etc.). It is apparent that the use of the ‘be’ auxiliary within the unique syntactic environment of the analytical future tense has some consequences for its status as an auxiliary and, inevitably, its “controversial” behaviour. To some extent, it can be argued that Czech *budu* in *budu spát* ‘I will sleep’ is closer to the semi-lexical instance of *muset* in *musím spát* ‘I have to sleep’ than, for example, to the conditional auxiliaries, purely because of the array of potentially semi-lexical properties it displays. One of these properties we have encountered here is its ability to claim all agreement and tense features.

Although it is not the aim of this thesis to analyze Czech auxiliaries<sup>54</sup>, the ongoing problem of *budu* and its complicated value for our semi-lexical argument is further mentioned with respect to negation and ellipsis.

The use of the analytical tense forms is only one of the two options Czech has when expressing the future. The other is the use of aspectual affixes, such as the prefix *do-* in *dopsat* ‘complete writing’ as opposed to simple *psát* ‘write’, and iterative suffixes *-ava/-ova* in *psávat* ‘used to write’. The ability of aspectual prefixes to carry certain tense features is helpful for our argument in terms of adding further support to the analysis of both the lexical and functional qualities of Czech modals. The use of the analytical future tense form and that of aspectual prefixation appear to be mutually exclusive, to the extent that it is not possible to use both in the same structure, as the following data clearly show:

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<sup>54</sup> A lot of work in this area has been recently done in Veselovská (2003, 2004) and Veselovská and Karlík (2004), dealing with the whole diverse range of the ‘be’ auxiliary in Czech and the structural roles its varieties play within the verbal phrase from the minimalist perspective.

(5) a. Jan bude psát tu knihu.  
 Jan AuxFut3Sg writeInf that bookAcc.  
 ‘Jan will write that book.’

b. \*Jan bude dopsat tu knihu.  
 Jan AuxFut3Sg writeFutCompInf that bookAcc

c. Jan dopíše tu knihu.  
 Jan writeFutCompl tu knihuAcc.  
 ‘Jan will finish writing that book.’

(5a) shows the analytical future tense form of *psát* ‘write’ in its obligatory role to express the ‘simple future’, if we use this working term to distinguish it from the future interpretation of the prefixed form. The attempt to combine both the analytical future tense form with the *do-* prefix yields the ungrammatical structure in (5b). In order to accept the prefix with the temporal feature, the verb *psát* has to remain in the present tense form, as suggested by (5c). This requirement is probably caused by the fact that the *do-* prefix itself is already responsible for the future interpretation, which causes the primary analytical form to be redundant, thereby affecting the grammaticality of the whole structure. In other words, since both options fulfil an identical grammatical role, they compete for the position in the structure. However, (5b) can become grammatical when the lexical verb attains the iterative character. In this case, the specific temporal interpretation of the *do-* prefix becomes cancelled by introducing the iterative suffix *-ova*:

(6) Jan bude dopisovat tu knihu.  
 Jan AuxFut3Sg writeComplIter that bookAcc  
 ‘Jan will be finishing writing that book.’

The introduction of the iterative suffix changes the overall temporal interpretation of the whole sentence. In this case, *do-* in *dopisovat* is left with its primary function, i.e. to signal completeness. However, due to the iterative reading, the final interpretation of (6) does not point to the completion of the book at any specific moment in time. Rather, the predicate in (6) denotes an unspecified section of time in the future when the attempt to complete the book will be made. There is no competition between two different temporal elements fulfilling the same function, similar to (5b).

It is important to understand how both the analytical form and aspectual prefixes contribute to expressing the future tense in Czech, as we encounter their diametrically opposite effect on Czech modals. Consider again the data that has been used so far, this time containing a modal:

- (7) a. Jan    bude            muset       psát       tu    knihu.  
          Jan   AuxFut3Sg   mustInf   writeInf   that   bookAcc.  
          ‘Jan will have to write that book.’
- b.    Jan       bude            \*domuset               psát       tu    knihu.  
          Jan    AuxFut3Sg   mustFutCompInf   writeInf   that   book
- c.    Jan       \*domusí               psát       tu    knihu.  
          Jan    mustFutCompl   writeInf   tu    knihuAcc.  
          ‘Jan will finish having to write that book.’
- d.    Jan       bude            muset       dopsat                        tu    knihu.  
          Jan   AuxFut3Sg   mustInf   writeFutCompInf        that   book  
          ‘Jan will have to finish writing that book.’

The data in (7) demonstrate the ability of Czech modals to form analytical tense structures by taking the ‘be’ auxiliary in the future form. This behaviour is identical to that of fully lexical verbs, as is described in Table 3 above. The prime example can be found in (7a), where the future auxiliary *bude* is complemented by a modal CVD. The argument here is that the ability to use the ‘be’ auxiliary favours the lexical quality of the modal.

However, Czech modal verbs do not form the aspectual pairs of the type *psát* ‘write’/ *dopsat* ‘finish writing’. They cannot be prefixed to obtain a future tense interpretation in examples (7b) and (7c) above. Hence the issue of competition between the analytical tense form and prefixation is not relevant for Czech modals since they reject aspectual prefixation and suffixation of any character. The ungrammaticality in (7b) is a consequence, then, of the fact that Czech modals can take neither suffixes nor prefixes, rather than of the concurrence of the prefix *do-* and the analytic tense form. This is shown clearly in (7c), which remains ungrammatical even after the concurrence has been removed. The structure in (7d), on the other hand, shows that the lexical verb can easily retain the *do-* prefix if it is not in the leftmost position of the CVD.

Whilst the ability to use the ‘be’ auxiliary to form the analytical future tense form has been regarded as favouring the lexical quality of the Czech modals, the inability to form aspectual pairs shows their functional behaviour and as such is further discussed in section 3.3.2.

This section can be summarized with the following observation:

- (8) Czech modals display a rich morphological paradigm, practically identical to that of full lexical verbs.

Czech modal verbs retain the morphological paradigm of fully lexical verbs. Crucially, this makes them different from functional verbs such as true auxiliaries, and further supports their semi-lexical status.

### 3.2.2. The role of negation

Negation is a complex phenomenon in Czech syntax, which applies especially for the case of large verbal phrases. Despite its complicated nature, which will become immediately evident in the development of our argument, negation is a distinctive factor between lexical and functional behaviour. This section will argue that, generally, ‘hosting’ negation (a negative prefix) is a lexical property. Under normal conditions, lexical elements of a Czech verbal domain are given preference over the functional ones in terms of containing a negative prefix. This will be evident especially in structures involving both the auxiliary and the modal. Consequently, we will see that Czech modals show the same patterns as fully lexical verbs regarding negation, which distinguish them from the true auxiliaries.

The fact that negation can distinguish between auxiliaries and semi-lexical verbs will be demonstrated by the difference between negated modal structures in Czech and English, where modals are auxiliaries. I will show in section 3.1.2.2 that whilst there is an ambiguity involved in English sentences such as *He cannot sleep* in terms of the scope of negation, similar ambiguity is not present in Czech. I will propose that this is due to the ability of Czech modals to employ a negative prefix in the same way as lexical verbs, which creates two lexical positions for negation in simple modal sentences such as *He cannot sleep* in Czech. I argue that this makes



Czech modals substantially different from English modal verbs, and supports the hypothesis that they can display a certain level of lexical properties.

### 3.2.2.1. Negation, negative concord and Czech syntax

Negation in languages is a highly complex issue systematically discussed since Jespersen (1917). Jespersen introduces the process of historical change that negation undergoes in a number of languages, which has become known as ‘Jespersen’s cycle’. The process is cyclical, representing historical stages in which negation elements in the sentence increase or reduce their formal complexity.<sup>55</sup> Current theories (Schwenster 2006, Kiparsky & Condoravdi 2006, Willis 2005) distinguish diachronically between three to five stages of Jespersen’s cycle. Willis’ minimalist approach towards Jespersen’s cycle offers the following generalization of the process: in the first stage, negation is expressed by the use of a preverbal negative marker. This marker weakens in the middle stages, and has to be reinforced by some other element, such as noun phrase or adverb. This new element is optional at first, and then becomes obligatory. In the final stage, the preverbal negative marker itself becomes optional, eventually disappearing entirely from the language. The process has been effectively demonstrated in the French negative sentences:

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<sup>55</sup> Schwenster (2005: 1).

(9) French negative cycle

Stage 1. NEG + VERB	<i>Je ne sais.</i> ‘I don’t know’
Stage 2. NEG + VERB + EMPHATIC NEG	<i>Je ne sais (pas).</i>
Stage 3. NEG + VERB + OBLIGATORY NEG	<i>Je ne sais pas.</i>
Stage 4. VERB + NEG	<i>Je sais pas.</i> <sup>56</sup>

(9) represents the fully ‘reinforced’ negation in Stage 3, where the preverbal negative marker *ne* co-occurs with the *Negative Polarity Item* (NPI – grammatical item that appears only in the non-positive environments) *pas*.<sup>57</sup>

Although being presented within the perspective of diachronic syntax, Jespersen’s cycle describes the complexity of negation. It demonstrates why there are multiple occurrences of diverse negative elements within a single clause, and why some languages allow these co-occurrences whereas others do not. In other words, it has the potential to offer a unifying account of negation by bridging the gap between double/multiple-negation languages (Czech, Polish), and single-negation languages (English). Czech allows the sentences such as:

(10) Jan	<i>nečetl</i>	<i>nikdy</i>	<i>žádnou</i>	<i>knihu.</i>
Jan	NEGread3SgPast	NEGnever	NEGnoneAcc	bookAcc
‘Jan hasn’t ever read any books.’ <sup>58</sup>				

<sup>56</sup> See Ladusaw (1993). The negative cycle has been identified as a grammaticalization process in Geurts (2000).

<sup>57</sup> Negative polarity is an important issue central to theories about negation in language, so the literature is, as expected, vast. Amongst the most comprehensive works are Ladusaw (1979), Hoeksema (1983), Horn (1989). Some of the more recent papers deal with the issue of NPIs and their licensing in the structure (Dikken 2002), as well as the difference between Negative Polarity and Positive Polarity (Szabolsci 2004).

<sup>58</sup> Non-standard (colloquial) English also allows multiple negation, as in *He hasn’t never read no book*.

The sentence in (10) contains three negation elements of a different character: the prefix *ne-*, productively functioning as a preverbal negative marker in Czech syntax, the adverb *nikdy* ‘never’ and the negative quantifier *žádnou* ‘none’. All three negative markers contribute to the unified scope property of the sentential negation in (10). This phenomenon, which is created by Jespersen’s cycle, has been characterized in synchronic syntax as *Negative Concord* (NC)<sup>59</sup>, the co-occurrence of negative elements with negative expressions that does not result in a cumulative negation. NC is closely related not just to the interpretation of negation attained by Jespersen’s cycle, but also to the existence of Negative Polarity Items.

NC has been recently observed and thoroughly examined in several Slavic languages (Brown & Przepiórkowski 2001). Brown (1999) analyzes its role in the syntax of Russian negation within the minimalist framework. Similarly, Polish is discussed in terms of NC in Przepiórkowski & Kupsc (1997) from the perspective of HPSG. Czech, as a member of the Slavic family of languages, is a strong NC language. Czech NC as part of a syntactic structure of negation is analysed in Kosta (2001, 2003a, 2003b).

The close proximity of Czech and Polish means that the NC in both languages follows identical rules. For instance, the relations between negative preverbal markers (negative prefixes) and phrasal NPIs in the structure are significant. NPIs in Czech and Polish have to be licensed by negative markers in the functional projections (NegP introduced into Czech syntax in Kosta 2001) that allow scope over the predicate, regardless of whether we deal with sentential or verbal negation. The licensing rule has been amply demonstrated for Polish NC using the following data:

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<sup>59</sup> Zanuttini (1991), Haegeman & Zanuttini (1991), Ladusaw (1992), etc.

(11) a. Nikt \*(nie) przysedł  
 nobody not came  
 ‘Nobody came.’

b. \*Nikt dał nikomu książki  
 nobody<sub>nom</sub> gave nobody<sub>dat</sub> book  
 ‘Nobody gave a book to anybody.’

Przepiórkowski & Kupsc (1997: 249)

(11a) is ungrammatical when the negative prefix *nie* is missing. In this case, there is nothing to license the NPI(‘n-word’<sup>60</sup>) *nikt*. Similarly, *nie* is absent from (11b). The sentence is ruled out because it represents the case where one NPI (*nikt*) functions as the licenser of another NPI (*nikomu*). This is prohibited in Polish. The licensing of NPIs in Czech is identical. Our Czech example in (10) becomes ungrammatical where both NPIs are left in the structure without the licensing negative prefix:

(12) a. \*Jan četl nikdy žádnou knihu.  
 Jan read NEGnever NEGnoneAcc bookAcc  
 ‘Jan hasn’t ever read any book.’

b. \*Jan nikdy četl žádnou knihu.  
 Jan NEGnever read NEGnoneAcc bookAcc  
 ‘Jan hasn’t ever read any book.’

The grammaticality issue in (12) is not simply caused by the fact that NPI can be positioned too low in the structure to achieve appropriate scope. The existence of (12b) shows us that even if *nikdy* ‘never’ appears to climb to a preverbal position

<sup>60</sup> The term ‘n-word’ is introduced in Laka (1990).

higher in the structure, it cannot license *žádnou* ‘none’ and the scope requirement of a resulting negation<sup>61</sup> is not satisfied. Hence, in respect of Jespersen’s cycle, the presence of the negative prefix *ne-* is compulsory in Czech and occupies a dominant position within the projection of the negative phrase (NegP).

We do not have the space in this thesis to systematically analyse the relevance of NegP for Czech syntax. A considerable amount of syntactic literature is dedicated to the development of NegP from the specific symbol (Neg) first appearing in Klima (1964) and Lasnik (1972). The NegP projection plays an important role in the Split-Infl hypothesis (Pollock 1989), and is fully integrated into the syntactic representation in Ouhalla (1990), Haegeman (1995) and Zanuttini (1997). I will assume that the employment of NegP in Kosta (2001) represents the syntactic structure of Czech negation. However, it is not necessary to operate with NegP to demonstrate how the NC and other negation related phenomena work both in modal and non-modal structures in Czech. Moreover, NegP is not a projection that can intervene between root and epistemic modality in Czech syntax (as demonstrated in chapter 9), and it is a matter of discussion whether NegP has to be realized at the level of overt (derivational) syntax at all, or whether its scope properties are captured by processes at LF. The possible solution is suggested in chapter 10.

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<sup>61</sup> Semantically, the problem posed by Negative Concord is the problem of compositionality. The question is, if we have more than one negative item in a single clause, how do we achieve a single negation scope? The solutions are several. One of the suggestions is that n-words are in fact inherently non-negative indefinites (Ladusaw 1992) or universal quantifiers (Gianakidou 2000). I assume that semantically, the most likely explanation is Haegeman & Zanuttini’s (1996) treatment of the West Flemish NC process, in which the input are multiple, inherently negative monadic quantifiers, and the output is one negative polyadic quantifier.

### 3.2.2.2. Sentential v. verbal negation in Czech modal structures

The cooperation between negation and modality is to a large extent a ‘puzzling’ phenomenon (Butler 2003: 4), involving often a number of ‘messy and unaccountable pieces of data’ (Cormack & Smith 2002: 156). The problem is also closely related to the diverse scope properties entailed in the structures where both modality and negation appear. In their treatment of modality and negation in English, Cormack & Smith (2002) operate with the difference between sentential and verbal scope of both modals and negative markers/polarity items. The combinatory properties resulting from the above are complex. The idea is based on the following English data (Cormack & Smith 2002: 136):

(13) Edwin cannot/can not climb trees

- |  |          |
|--|----------|
| a. ‘It is not permitted that Edwin climbs trees’ | NOT [CAN |
| b. ‘Edwin is permitted not to climb trees’       | CAN [NOT |

Both readings in (13a-b) are possible. In (13a), CAN is in the scope of NOT, whereas (13b) represents a structure where NOT is in the scope of CAN. Note that in both cases, the modal has a root interpretation. Cormack & Smith argue that (13a) is a representation of sentential negation, which they designate as *Pol[NEG]*. The inverse scope in (13b) is attributed to the VP or adverbial negation, *Adv[NEG]*. The sentential negation motivates the functional head Pol that is obligatorily present in all tensed clauses (Cormack & Smith 2002: 137).<sup>62</sup> *Adv[NEG]*, on the other hand, does not have to be present. It appears in a projection lower than Pol. In addition to the two types of negation, modality is also separated into two classes, *Modal<sub>I</sub>* (Pre-Pol) and

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<sup>62</sup> Pol has the value of either Pol[NEG] or Pol[POS].

*Modal*<sub>2</sub> (Post-Pol), which behave differently with respect to Pol. This gives Cormack & Smith the following sequence:

(14) C T (Modal<sub>1</sub>) Pol (POS/NEG) (Modal<sub>2</sub>) (Adv[NEG]) ...<sup>63</sup>

The examples of Pre-Pol modal type in English are *shall, should, must, may, might*.

Post-Pol modals are *need, can, and could*.

Crucially, Czech modals deal with the dichotomy between sentential and verbal negation in a radically different way. English structures such as (13) are ambiguous in respect of the two semantic positions for negation because there is no preverbal negation in modal structures. English does not have the use of negative (*n-*) prefixes, which are widespread in Slavic languages. Instead, *do*-support is used for negation of lexical verbs, as in *Edwin does not climb the tree*. *Do*-support competes for the same auxiliary position in the structure as the modals and therefore is ruled out of the modal structures. Instead, modal verbs in English, being pure auxiliaries, allow only a post verbal negation.

All Czech modal verbs, on the contrary, attain negative prefix *ne-* in those cases when negation scopes over modality (the interpretation in 13a). Where negation remains below in the scope modality (see 13b), the negative prefix is attached to its infinitival complement. This gives Czech a powerful disambiguating tool in the grammar. Importantly, the ambiguity of (13) can be cancelled in Czech syntax by redeploying the negative prefix *ne-*, either to a modal or to its lexical verb complement. This is demonstrated by the following data:

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<sup>63</sup> Cormack & Smith (2002: 138).

(15) a. Jan **ne**může číst tu knihu.  
 Jan NEGcan3Sg readINF that book Acc  
 ‘Jan cannot read that book.’

b. Jan může **ne**číst tu knihu.  
 Jan can3Sg NEGreadINF that bookAcc  
 ‘Jan can not read that book.’

The distribution of negation in Czech modal structures contributes to their lexical characteristics. It is important to note that the employment of negative prefix *ne-* in V+Vinf structures differs from that in simple VPs. In the modal structure, *ne-* can precede both the modal and the infinitival complement.

At first sight, negation in (15) can scope either over the whole predicate by the negative prefix *ne-* attached to the modal or over the infinitival lexical verb itself, in which case it is the lexical verb that is prefixed. The fact that *ne-* is available for modal verbs strongly reflects their lexical behaviour, since it generally cannot be attached to the true auxiliaries. The relevant data are below:

(16) a. **Ne**četl jsem tu knihu.  
 readNEGPast AUX1Sg that bookAcc  
 ‘I didn’t read that book.’

b. \* **Ne**jsem četl tu knihu.  
 NEG AUX1Sg readMasPast that bookAcc  
 ‘I didn’t read that book.’

c. \*Četl **ne**jsem tu knihu.  
 readMasPast Neg AUX1Sg that bookAcc  
 ‘I didn’t read that book.’



d. Včera jsem **ne**četl tu knihu.  
 yesterday AUX1Sg readNEGPast that bookAcc  
 ‘I didn’t read that book yesterday’.

e. \*Včera **nej**sem četl tu knihu.  
 yesterday NEG AUX1Sg readPast that bookAcc  
 ‘I didn’t read that book yesterday.’

The data in (16) demonstrate the ungrammaticality that arises every time the ‘be’ auxiliary is negated. The situation is in some cases complicated by the appearance of *Long Head Movement* (LHM), i.e. the movement of the lexical verb from its  $V^0$  position over the auxiliary to  $C^0$  (Lema & Rivero 1989, Rivero 1991). However, this does not affect the regularity of the pattern that distinguishes between the functional and the lexical verb.

The LHM is present in (16a) and (16c), but is blocked in (16d) and (16e) due to the syntactic position of the adverb *včera* ‘yesterday’; the lexical verb remains in  $V^0$ . The example in (16c) show that even in the cases of a valid LHM, the restriction of the negative prefixation of the auxiliary still applies. Crucially, this means that despite the LHM being a complicating factor, the difference between the auxiliary and the lexical verb in (16) is strict. And when we rule out the LHM cases by introducing the sentence-initial adverb *včera* ‘yesterday’ ((16d) and (16e)), the structure behaves exactly as expected.

In both cases, the auxiliary *jsem* cannot host the negative prefix *ne-*. The same principle applies also to conditional *bych* in similar structures (ignoring the LHM options):

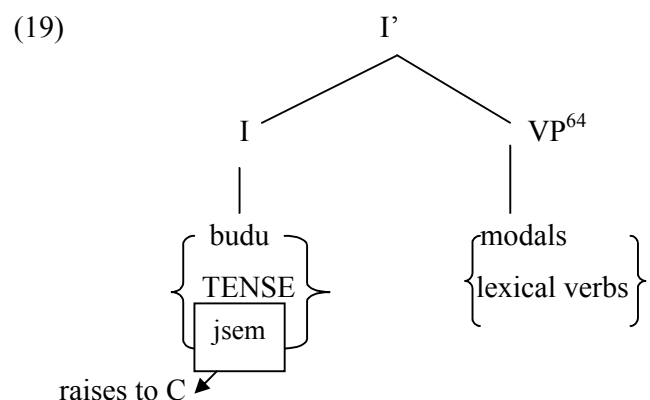
- (17) a. **Ne**četl bych tu knihu.  
 readNEGPast AUX1Sg that bookAcc  
 ‘I would not read that book.’
- b. \***Ne**bych četl tu knihu.  
 NEG AUX1Sg readMasPast that bookAcc  
 ‘I would not read that book.’

There seems, however, to be one exception to the general rule that Czech auxiliaries cannot host negative prefix *ne-*, suggested by the behaviour of analytical future tense forms. I have already discussed in the previous section the specific role of the auxiliary *budu* in the formation of the analytical future tense. In addition to the fact that *budu* precedes the lexical verb in unmarked structures, it can host the negative prefix *ne-*:

- (18) a. Jan **ne**bude číst tu knihu.  
 Jan NEG AUX3Sg readInf that bookAcc  
 ‘Jan won’t read that book.’
- b. ? Jan bude **ne**číst tu knihu.  
 Jan AUX3Sg NEGreadINF that bookAcc  
 ‘Jan will not read that book.’

Importantly, (18a) is the unmarked representation of negation in the analytical future tense. (18b) is generally deemed acceptable by the native speakers, however it contains additional information. For instance, it implies that Jan made an active decision not to read that book. How can we explain this behaviour of *budu*, which makes it close to modal verbs in terms of negation?

Firstly, it is clear that *budu* differs from other types of true auxiliaries. Nevertheless, I assume that it is derived in the same auxiliary syntactic position as all other auxiliaries. This fact is demonstrated by the following syntactic representation:



The behaviour described in (18) suggests that *budu* is closer to semi-lexical items on our scale from functional to lexical than other auxiliaries, but still differs substantially from semi-lexical candidates such as modal verbs.<sup>65</sup>

Secondly, the difference between modal structure and the analytical tense form regarding the negative prefix *ne-* is discernable also on semantic grounds. Whilst the negative marker switch in (18) adds additional information of ‘volition’ to the interpretation, it does not change the scope of negation. There is no difference between either structure in terms of negation – (18a) simply implicates (18b).

<sup>64</sup> Both lexical verbs and modals in Czech are of category V. However, modal CVDs are not derived as standard VPs. Whilst chapter 6 discusses this issue in detail, (19) emphasizes the difference between Vs and true auxiliaries in Czech.

<sup>65</sup> See chapter 2 for the scale approach to semi-lexicality. Modals and the future auxiliary *budu* do not compete for the same syntactic position in the structure. A modal construction forms the analytical future tense by exactly the same process as simple VPs, by acquiring *budu* in the auxiliary position:

(i) Jan [Tp**bude** [CvD muset číst tu knihu].  
 Jan Aux3Sg mustInf readNegInf that bookAcc  
 ‘Jan will have to read that book.’

However, such implication cannot be made in the examples containing the modal in (15) above. It is not true that *Jan nemůže číst tu knihu* ‘Jan cannot read that book’ implies *Jan může nečíst tu knihu* ‘Jan can not-read that book’.

The data show that Czech does not distinguish between two types of modals with respect to the difference between sentential and verbal negation. All modal verbs can attain the negative prefix *ne-*, as well as delegate *ne-* to their infinitival complements.

### 3.2.2.3. Negative Concord situation

We have seen that NC in Czech simple VPs requires the negative prefix *ne-* to license all Negative Polarity Items involved in negation. This requirement distinguishes between (12a) and (12b), repeated here as (20):

- (20) a. Jan *nečetl* *nikdy* *žádnou* knihu.  
 Jan NEGread3SgPast NEGnever NEGnoneAcc bookAcc  
 ‘Jan hasn’t ever read any book.’
- b. \*Jan *četl* *nikdy* *žádnou* knihu.  
 Jan read3SgPast NEGnever NEGnoneAcc bookAcc  
 ‘Jan hasn’t ever read any book.’

I have argued that (20b) is missing the licenser for the NPIs *nikdy* and *žádnou*, namely the negative prefix *ne-*. Let us see how this principle works in modal CVDs with more than one verbal position for the negative prefix *ne-*. The relevant data are:

- (21) a. Jan *nemusel* číst *nikdy* *žádnou* knihu.  
 Jan NEGmust3SgPast readInf NEGnever NEGnoneAcc bookAcc  
 ‘Jan has never had to read a book.’
- b. \*Jan musel číst *nikdy* *žádnou* knihu.  
 Jan must3SgPast readInf NEGnever NEGnoneAcc bookAcc  
 ‘Jan has never had to read a book.’
- c. ??Jan musel *nečíst* *nikdy* *žádnou* knihu.  
 Jan must3SgPast NEGreadInf NEGnever NEGnoneAcc bookAcc  
 ‘Jan hasn’t ever read any book.’

The data in (21) show that the rules of Negative Concord work differently in the CVD structure. The structure (21a) is well formed since all negative polarity items are licensed by the prefix *ne-* attached to the modal. As expected, (21b) is ungrammatical because *nikdy* and *žádnou* do not have such a licensing element higher in the structure. However, (21c), where the licenser is attached to the infinitival complement of the modal, is also judged problematic in terms of acceptability. Therefore, whilst the simple negation in the form of the negative prefix *ne-* can scope either over the modal or its infinitival complement (example (15)), it has to scope over the modal only in those cases where negative polarity items are presented in the CVD ((21c) above).<sup>66</sup> This implies that the position above the modal represents the primary (unmarked) position for negation in Czech CVD, and that only the modal verb has the unrestricted ability to license negation.

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<sup>66</sup> However, this statement is somehow weakened in the case of the epistemic reading of the modal. The sentence (21c) may be interpretable as ‘it is very possible that Jan has never read any book’ when, for instance, Jan’s general knowledge is questioned.

#### 3.2.2.4. Summary: negation in Czech modal structures

We have seen that negation strongly supports the lexical characteristics of Czech modal verbs. The observation has been based on the fact that the negative prefix *ne-*, responsible for negation in Czech syntax, can be attached to a modal as well as to the lexical infinitive in the CVD structure. The distinction between the direct negation of lexical verbs and that of auxiliaries, characterized by the rise of ungrammaticality in the case of the latter, proved to be significant in the proposal that the accessibility of the negative prefix *ne-* is an indication of lexical behaviour of Czech modals.

There are other complicated factors contributing to the mechanism of the distribution of the negative prefix *ne-* in the Czech verbal domain, such as Negative Concord (NC) and Long Head Movement (LHM). The fact that Czech is a strong NC language underlines the importance of the negative prefix *ne-* being present on a modal verb in order to license the NC elements in the clause structure.<sup>67</sup> The LHM takes place in the singular forms of the analytic past tense and conditional structure in Czech, and thus entered our argumentation regarding data in (16) and (17) above. However, we have seen that the presence of LHM does not hinder the main argument as it does not have a significant effect on negation.

#### 3.2.3. The role of VP ellipsis

This section contains the analysis of an elliptic phenomenon involved in Czech modal CVDs. The syntactic notion of ellipsis is developed against the broader

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<sup>67</sup> See the data in (20).

background of anaphoric relations. The term VP ellipsis covers those instances of anaphora in which a missing predicate is able to find an antecedent in the surrounding discourse (Johnson 2001: 439). Johnson gives the following example of this occurrence:

- (22) a. Holly Golightly won't [eat rutabagas]  
b. I don't think Fred will  $\Delta$ , either

The elided VP is marked as  $\Delta$  in (22b). Three main issues are identified in the literature regarding VP ellipsis. The first one is licensing. It is an established fact that the environment to the left of the elliptic element creates licensing conditions that rule out certain possible types of ellipsis. The example of an ungrammatical ellipsis is (23c) below:

- (23) a. I can't believe Holly Golightly won't [eat rutabagas]  
b. I can't believe Fred won't  $\Delta$ , either.  
c. \*I can't believe Fred  $\Delta$ , either.

The data in (23) show that the ellipsis site has to be licensed by the modal and/or the elided element cannot be larger than VP (Johnson 2001: 439-448). The question is what grammatical items have the ability to license VP ellipsis. Going back to the previous section, sentential negation has been recognized as a licensor of ellipsis in Löbeck (1995).

The second issue involves the structural relations between the elided material and its antecedent. What are these relations? How are they established? The answers are complicated by the anaphoric character of VP ellipsis. As with other forms of

anaphora, VP ellipsis is strongly related to the discourse, making it difficult to establish any purely syntactic conditions at all.

The third, probably most important issue, relates to the question of how the meaning of the ellipsis site can be recovered from its antecedent. The answer is not easy, as it is often not automatically obvious what the relation between the antecedent and the elided material is. The problem is clearly visible in the following example:

- (24) I know which book Max read, and which book Oscar didn't.
- a. I know which book Max read, and which book Oscar didn't  $\Delta$ .
  - b. I know which book Max read, and which book Oscar didn't  $\Delta$   $t_i$ .

Johnson (2001: 456-459) suggests that the structure in (24) has two different interpretations of the relation between the antecedent and the elided material. (24a) involves a derivational approach to VP ellipsis that locates a phonetically empty item (the trace  $t$ ) inside the ellipsis. The representation in (24b) on the other hand relies on the trace being outside the ellipsis. Although it presents a problem for the derivational theory of ellipsis, (24b) seems to be the more appropriate approach. The ellipsis can elide the portions of a VP instead of the whole VP, leaving remnants in the positions similar to those reserved for the outside trace in (24b). An example of this case is in (25):

- (25) While O.J. Berman read Fred, he didn't  $\Delta$  Dickens.<sup>68</sup>

The existence of (25) shows that the interpretation involved in (24b) should be preferred to the one in (24a). More generally, it shows that the term 'VP ellipsis' does

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<sup>68</sup> See Johnson (201: 459).



not cover those instances where only a portion of a VP and not the whole phrase is elided. Subsequently, the data in (24) and (25) have led researchers to distinguish between the VP ellipsis on one side and other elliptic processes within the verbal domain on the other side. Levin (1986) calls the case of (25) ‘pseudogaps’, involving a process different to VP ellipsis. Löbeck (1995) sets VP ellipsis (*Because Pavarotti couldn’t [e], they asked Domingo to sing the part*) at the same level as ellipsis in NP (*Although John’s friends were late to the rally, Mary’s [e] arrived on time*). She proposes a unifying account of ellipsis, arguing that processes of licensing and identification condition regarding ellipsis are analogous to those of non-overt pronominals. The core hypothesis of this account is that ellipses are non-NP pronominal empty categories. Where an instance of the ellipsis within a VP does not follow the unifying account, Löbeck claims that it has to be distinguished as an example of ‘gapping’ (*John bought a book and Mary a cake*) or ‘stripping’ (*John gave Mary a present but not Jane*).<sup>69</sup>

### 3.2.3.1. Stranded modals as a result of VP ellipsis

Czech modal structures involve the whole array of elliptic processes, including VP ellipsis and gapping.<sup>70</sup> The modals in Czech can represent, or be part of, the elided material, as well as involving elliptic complements. The important result of some of these processes is that the modal can be stranded in the structure without its infinitival complement. This seems to falsely contradict the argument that the syntactic

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<sup>69</sup> Joe Emonds (personal communication) pointed out to me that since VP-ellipsis is predominant in English, researchers believe it is more cross-linguistic than it actually is. Many languages use an isolated V to replace an anaphoric VP (Spanish, Japanese). Nevertheless, the dichotomy between VP-ellipsis and V-ellipsis does not affect the argumentation in 3.2.3.1.

<sup>70</sup> In fact, I assume that gapping is much more widespread in Czech syntax than VP ellipsis.

characteristic of Czech modals forces them to always take infinitival complements<sup>71</sup>. The elided material is syntactically ‘still present’ and reconstructable, whilst the possibility of this kind of ellipsis supports the lexical behaviour of Czech modal verbs. The following data demonstrate the relevant elliptic process:

- (26) a. *Nechtěl jsem tam jít, ale musel jsem Ø.*  
 NEGwant Aux1Sg there goInf but mustPast1Sg Aux1Sg  
 ‘I did not want to go there, but I had to.’
- b. *Musíš psát tu knihu? Musím Ø.*  
 must2Sg writeInf that knihuAcc must1Sg  
 ‘Do you have to write that book? Yes I do.’

In (26), the infinitival complement (*tam jít* ‘to go there’ in (25a) and *psát tu knihu* ‘to write that book’ in (26b)) of the modal is dropped. I will call the elliptic process involved in (26) ‘infinitival ellipsis’ and understand it as a type of VP ellipsis in Czech CVD.<sup>72</sup> The result of the infinitival ellipsis is that it leaves the modal stranded without its obligatory complement. This is significant since (26) employs the ellipsis of a ‘lexical part’ of the CVD structure. Therefore, I assume that the stranded modal behaves like a lexical item in the second clause of both (26a) and (26b) by taking on the lexical status of the infinitival complement. Before we can test this assumption, we need to clarify the apparent effect of the infinitival ellipsis on the requirement that Czech modals have to select infinitives as their complements.

<sup>71</sup> The core of this argument is represented in chapter 5. However, the fact that Czech modals take infinitival complements to be able to participate in the CVD structure has been already noticed in chapter 1.

<sup>72</sup> This is in accordance with the derivation of Czech modal CVDs proposed in chapter 6, where I suggest that the complement of the modal in such structures is syntactically a VP.

Notice that the infinitival ellipsis does not contradict the fact that Czech modals require infinitival complements, which will be argued for in chapter 5. At this moment, I propose that the infinitival ellipsis does not violate the argument since it is possible to reconstruct the missing infinitival complement that is licensed by its antecedent. Subsequently, it can be argued that the clause containing the elided part still has the character of a CVD structure with a phonetically unrealized infinitival complement of the modal. I suggest that we deal with a specific type of licensing in these structures, which is able to operate over the strong sentence border, and thus has a broader scope than a simple syntactic rule.<sup>73</sup>

To test the assumption that the infinitival ellipsis in the CVD structure is possible due to the lexical character of Czech modal verbs, let us apply a similar elliptic process to the auxiliary. If the ability to be stranded is a lexical attribute, the expected result is that the auxiliaries cannot be left without their complements in the same way as modals due to the fact that they are strictly functional. The following data show that this is indeed the case as Czech auxiliaries resist any type of ellipsis of their lexical complements:

- (27) a. *Nechtěl jsem tam jít, ale musel jsem Ø.*  
 NEGwant Aux1Sg there goInf but mustPast1Sg Aux1Sg  
 ‘I did not want to go there, but I had to.’
- b. \* *Nechtěl jsem tam jít, ale Ø jsem.*  
 NEGwant Aux1Sg there goInf but Aux1Sg  
 ‘I did not want to go there, but I (AUX).’

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<sup>73</sup> The infinitival ellipsis in (26b) shows that the antecedent of the elided material can be traced across the sentence border. This shows that certain elliptic phenomena are clearly part of pragmatics, rather than syntax.

c. Chtěl bych tam jít, ale nemohl jsem Ø.  
 want Aux1Sg there goInf but NEGcan Aux1Sg  
 ‘I would have liked to go there, but I could not.’

d. \*Chtěl bych tam jít, ale Ø jsem.  
 want Aux1Sg there goInf but Aux1Sg  
 ‘I would have liked to go there, but I could not.’

The examples in (27a) and (27b) contain the ‘be’ auxiliary present in the analytical past tense. We can see that whilst the ellipsis of the infinitival complement of the modal does not cause any grammaticality problems in (27a), a similar ellipsis of the complements of the auxiliary ‘be’ (27b) is ungrammatical due to the fact that *jsem* is not in V, needed for ellipsis of VP. The examples in (27c) and (27d) involve the conditional auxiliary *bych* ‘would’ with the same result.

The similar grammaticality issue is created also in the case of the future tense analytical forms discussed at length previously, where the ‘be’ auxiliary (being inserted in I) takes VP complements. Consider particularly the interesting structures in (28), which contain two levels of infinitival ellipsis:

(28) a. Nechtělo se mi tam jít, ale budu muset Ø.  
 NEGwant Refl meDat there go but AuxFut1Sg mustInf.  
 ‘I did not want to go there, but I will have to.’

b. \*Nechtělo se mi tam jít, ale budu Ø.  
 want Refl meDat there go but AuxFut1Sg  
 ‘I did not want to go there, but I will.’

(28a) contains the reconstructable ellipsis of *jít tam* ‘go there’, whilst (28b) attempts to elide the complement of the auxiliary, *muset tam jít* ‘must go there’, and fails. The

VP ellipsis that leaves the future auxiliary stranded without its lexical complement cannot be licensed in the structure.

### 3.2.3.2. Summary: Ellipsis in Czech modal structures

Any analysis of elliptic phenomena in Czech verbal syntax is complicated by the prolific status of ellipsis that often reaches across sentence boundaries. One of the biggest tasks regarding this issue is to determine the character of licensing of the elided material. In other words, to understand how distinct types of ellipsis work, we need to explain the link between the elided material and its antecedent in different circumstances. As we have seen, some of these circumstances are strictly syntactic, but others are probably a matter of pragmatics rather than syntax. This applies to those kind of ellipses that are resolved across sentence boundaries (example (26b)). If the licensing cannot be accounted for by a syntactic rule, how strong is the ellipsis? How is the reconstruction of the elided material achieved in this case?

These questions are significant, but they exceed the syntactic framework employed in this thesis. We do not have space to investigate the broad issue of the pragmatics involved in the connection between the antecedent and the elided material. However, I suggest that the fact that modals can be involved also in pragmatic ellipsis only strengthens their lexical character.

To conclude the issue, I propose the link between modal stranding and lexical behaviour of modals – the regularity with which a modal in the CVD structure undergoes the elliptic process of the type described in (26) and (27) points towards its lexical behaviour. In contrast, auxiliaries cannot be stranded. Therefore, infinitival

ellipsis involved in Czech modal CVDs is an important diagnostic tool for assessing the lexical behaviour of Czech modals.

### 3.2.4. Some additional cases – reflexivization and PF movement

Czech modals, like fully lexical verbs, undergo a very productive process of reflexivization, which can be described as the ability of a verb to attract the reflexive pronoun *se*, as in the following example:

- (29) a. *Musí se to udělat zítra.* *modal reflexivization*  
 Must3Sg Refl it doInf tomorrow  
 ‘It must be done tomorrow.’
- b. *Dělá se to dobře.* *lexical reflexivization*  
 Do3Sg Refl it well  
 ‘It is well within our ability to do it.’

The attachment of a reflexive pronoun to the modal in (29) adds generic meaning to the sentence, implying a general, ‘unknown’ subject. In (29a), the modal remains in the most unmarked, non-infinitive third person singular form. The other examples of Czech modals taking the reflexive pronoun are, for instance, *chce se* ‘want’ Refl, *smí se* ‘allow’ Refl, *umí se* ‘able’ Refl and *holdá se* ‘intend’ Refl.

Both the combinatory relations of the Czech reflexive pronoun *se* in the syntactic structures and its often ambiguous interpretation are extremely intriguing issues figuring in current research.<sup>74</sup> For instance, Czech modals themselves are able to take reflexivized complements, both semi-lexical and lexical. In the light of this

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<sup>74</sup> See for example Oliva (2001).

fact, it is important that we distinguish cases where the reflexive is attached to the modal from those where it in fact ‘belongs’ to its complement. It is also important to see those examples appearing to favour the reflexivization of functional *budu* in a similar way. Both cases are represented in (30a) and (30b) respectively:

- (30) a. Jan    *se*     *musí*        *rozhodnout* *zítra*.  
          Jan    Refl    must3Sg    decideInf    tomorrow  
          ‘Jan has to decide tomorrow.’
- b. Bude        *se*     *pracovat* *zítra*.  
          Aux3Sg    Refl    workInf    tomorrow  
          ‘There will be work going on tomorrow.’

At first sight, (30a) is an ambiguous structure in terms of reflexivization. The reflexive *se* seems to belong either to the modal or to its infinitival complement. However, the reflexive verb form is *rozhodnout se* and not *musí se*. The structure in (30b) is important for our argument that pure auxiliaries cannot be reflexivized. In this case, the reflexive pronoun belongs to the lexical verb (*pracovat se*), not the auxiliary (*\*bude se*). The auxiliary takes the already reflexivized verb as its complement.

The last phenomenon we need to mention in support of the lexical properties of Czech modal verbs is related to the old problem of Czech being a language with a relatively free word order. This fact is demonstrated using the principle of Topic-Focus movement and scrambling (Bailyn 2001, 2003, Kosta 2006). The free word order phenomenon, widespread across Slavic languages, has been characterized as the ‘primary overlapping issue of interest’ for Slavic syntax for the foreseeable future (Bailyn 2000). The problem with Czech as a prototype of a free word order language is that only a small number of the grammatical items (clitics, wh-phrases,

prepositions) are unequivocally resisting a possible Topic-Focus movement. Anything else can appear in a variety of positions relative to each other, often depending on extra-syntactic considerations, made on the background of stylistics, information structure etc.<sup>75</sup>

Significantly for our argument, the restrictions of distribution in Czech grammar, wherever present, apply to functional rather than lexical items (the situation of clitics is the most frequent example). The Czech CVD is primarily a lexical domain harbouring semi-lexical items. Hence, according to the free word order parameter, however tight we argue the CVD is syntactically, it can be potentially broken by the redistribution of adverbial adjuncts to accentuate different Focus-Topic relations:

- (31) a. *Rychle* tu knihu musel číst.  
 quickly thatAcc bookAcc must3SgMasPast readInf  
 ‘He had to read that book quickly.’
- b. ?Číst *rychle* tu knihu musel.  
 readInf quickly thatAcc bookAcc must3SgMasPast  
 ‘He had to read that book QUICKLY.’
- c. ??Číst tu knihu *rychle* musel.  
 readInf thatAcc bookAcc quickly must3SgMasPast  
 ‘He HAD TO read that book quickly (not just could).’
- d. Musel tu knihu *rychle* číst.  
 must3SgMasPast thatAcc bookAcc quickly readInf  
 ‘He had to READ that book quickly (not just look into it).’

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<sup>75</sup> Not surprisingly, there is a long history of word order research in Czech syntax. It has its origin in the Prague School and includes the work of Firbas (1964), Mathesius (1964), Sgall (1972), Sgall, Hajičová & Panevová (1986) and Hajičová (1993).



It is not overtly clear whether we can accept structures (31b) and (31c) above, and such judgements would require larger research amongst native speakers. The existence of Topic-Focus movement would point out more lexical qualities of the modal, whilst also presenting a challenge for the syntactic integrity of Czech CVD. However, recent research on this issue (Kosta 2006) has suggested that such structures are indeed unacceptable in the case when the PF rule overrides or violates another rule already established in syntax. This puts a significant restriction on the word order in Czech, which is possibly far less ‘free’ than previously thought. If we assume Kosta’s position, ‘the problem’ becomes only marginally relevant for our analysis and does not contradict the CVD approach. Moreover, it is related to the vast number of phenomena that are not purely syntactic, such as ‘style’ and ‘information structure’ as already mentioned.

### 3.3. Functional properties of Czech modal verbs

Whilst we have found a range of lexical properties that can be assigned to Czech modals, their functional characteristics are surprisingly more straightforward, leading to a few clear examples. The existence of predominantly lexical properties within the modal group is surprising given the fact that modals have been unanimously characterized as auxiliaries in Czech syntax.<sup>76</sup> I will discuss two occasions of syntactic behaviour of Czech modals supporting the hypothesis that they share some functional properties with true auxiliaries: their inability to take clausal complements and form aspectual pairs.

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<sup>76</sup> Kopečný (1962), Karlík (1998).

### 3.3.1. Inability to take clausal complements

It is a general rule in Czech syntax that an infinitival complement of a verb can be substituted for by an adjacent clause. However, this is not the case with modals. I assume that the primary functional property of Czech modals is their inability to be followed by a full clause, and sum up this assumption as follows:

(32) Czech modal verbs cannot have any clausal complements.

This thesis deals with the V+Vinf structures that can be characterized as mono-clausal.<sup>77</sup> The inability to take clausal complements has to be outlined as one of the main decisive factors in recognizing the V+Vinf structures containing semi-lexical verbs from those potential V+Vinf structures that are in fact bi-clausal. Czech modals, as well as the small group of aspectual verbs (*začít* ‘begin’, *přestat* ‘stop’, *pokračovat* ‘continue’, *skončit* ‘finish’) and single restructuring verbs such as *zkusit* ‘try’, cannot be followed by clauses. On the other hand, there are verbs like *rozhodnout se* ‘decide’ that both allow infinitival complementation and can select relative clauses. Due to the fact that they have clausal complements, they cannot be characterized by a monoclausal analysis and as such have been disqualified from being candidates for semi-lexicity:

(33) a. Rozhodl            se    číst        tu    knihu.  
          decide3SgPast   refl readInf   that   bookAcc  
          ‘He decided to read that book.’

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<sup>77</sup> See chapter 2.

- b. Rozhodl se, že bude číst tu knihu.  
 decide3SgPast refl that Aux3SgFut readInf that bookAcc  
 ‘He decided that he would read that book.’
- c. Chtěl číst tu knihu.  
 want3SgPast readInf that bookAcc  
 ‘He wanted to read that book.’
- d. \*Chtěl, že bude číst tu knihu.  
 want3Sg Past that Aux3SgFut readInf that bookAcc  
 (He wanted that he would read that book)
- e. Musel číst tu knihu.  
 must3SgMasPast readInf that bookAcc  
 ‘He had to read that book’
- f. \*Musel, že bude číst tu knihu.  
 must3SgPast that Aux3SgFut readInf that bookAcc  
 (‘He had to that he would read that book’)

(33) represents a lexical verb in Czech that has the ability to take infinitival complements. Because *rozhodnout se* ‘decide’ is the full lexical verb, it can select a whole clause as well (33b). All the remaining examples in (33) contain modals. The substitution of the infinitival complement by a clause is ruled out in both the case of *chtít* ‘want’ (33d) and *muset* ‘must’ (33e). This is to be explained by both modals sharing a number of functional properties. All Czech modal verbs yield an ungrammatical structure by attempting to select clauses as complements. The unacceptability of (33d) and (33f) suggests that the syntactic status of the complements of modals in Czech is most probably V, not IP or CP. This hypothesis is explored further in chapter 5.

### 3.3.2. Inability to formally distinguish aspectual pairs

Aspect is a highly complex phenomenon, interacting with tense (Comrie 1976, 1985) and modality in language. Dahl (1985) combines aspect, tense and modality cross-linguistically in an attempt to establish the unifying approach to all three systems. Work on Czech aspect includes Eckert (1984) and Filip (1996), who studies aspect from the perspective of Thematic Structure. In this section, I will concentrate on the ability of lexical verbs to change aspect by involving aspectual affixes. The general idea is that whilst lexical V items can take aspectual affixes productively, functional items (auxiliaries) cannot.

We have already seen the contribution of the aspectual prefixed *do-* in the future tense structures (example 5a above). Whilst lexical verbs can express the future tense simply by attaining *do-* prefix (*Jan dočte tu knihu* ‘Jan will finish reading that book’), modals cannot (\**Jan domusí číst tu knihu* ‘Jan will finish having to read that book’).

The additional temporal feature is common in Czech verbs with perfective aspect. Czech modals are not able to express the perfective v. imperfective dichotomy. Naturally, this contributes to the functional character of Czech modals:

- (34) Czech modal verbs are excluded from the productive process of forming aspectual pairs.

The majority of Czech lexical verbs, apart from those with existential, generic meaning and some idiosyncratic examples,<sup>78</sup> can productively form aspectual pairs.

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<sup>78</sup> The “problematic” verb is, for example, *existovat* ‘to exist’. Nevertheless, high productivity of the aspectual prefixation makes examples like *doexistovat* ‘cease to exist’, using the aspectual prefix *do-* imaginable.

In other words, they are able to express either perfective or imperfective meaning, as well as the change from one to another, by applying the aspectual affixes. This process is mainly of two kinds: prefixation and inflectional suffixation.

An example of the former is the pair *vidět* - *uvidět* ('see' – 'spot/see') with the aspectual prefix *u-*. In this case, the prefix itself has the additional temporal feature and semantic interpretation of telicity/punctuality that can be achieved in English by using a different word (to spot).

The aforementioned verb *rozhodnout se* 'to decide' can serve as an example of the latter. Due to its morphological structure, it already has the perfective meaning, which can be changed into the imperfective only by assuming the inflectional suffix – *ova*, very productive in case of telic verbs in Czech that are not prefixed. The aspectual pair that is formed in this way is as follows: *rozhodnout se* (telic, punctual; 'to decide/reach a decision') – *rozhodovat se* (atelic, iterative; 'to be in the process of deciding/to decide again and again').<sup>79</sup>

Regarding the verb *rozhodnout se* 'decide', the (lexical) ability to form an aspectual pair is here in accordance with the ability to select the clause as a complement. Czech modal verbs, on the other hand, cannot express any aspectual features at all, neither by prefixation nor by the use of inflectional suffixes. No aspectual pairs concerning modal verbs are possible (*muset* 'must' –  $\emptyset$ , *chtít* 'want' –  $\emptyset$ ).

The aspectual pairs or even triads (those employing both prefixation and suffixation) are so prolific in Czech syntax that even some purely functional verbs can

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<sup>79</sup> There are some lexical verbs in Czech that are able to employ both types of suffixes in the process of forming either secondary imperfectives (often receiving the iterative meaning) or secondary perfectives. One of the examples is our verb *vidět* 'see', which is vaguely atelic. By using several inflectional affixes, it can gain different degrees of iterative meaning on top of its atelicity: *vidat* 'to see/use to see repeatedly', *vidávat* 'use to see repeatedly for a more distanced (and longer) period of time from the moment of speaking' etc.

actually distinguish between perfectiveness and imperfectiveness. For instance, the auxiliary *být* ‘be’, whilst functioning as a copula, does so in (35) below:

- (35) a. Jan byl učitelem.  
Jan bePast3Sg teacherInstr  
‘Jan was a teacher.’
- b. Jan býval učitelem.  
Jan bePastImp3Sg teacherInstr  
‘Jan used to be a teacher.’

This naturally strengthens the mutual exclusiveness of both modality and aspect, which is not surprising given their semantic characteristics.

The inability to take clausal complements and distinguish between aspectual pairs proved to be two major indicators of the functional behaviour of Czech modal verbs. The following section concludes the observations made so far in chapter 3 and prepares the ground for further research.

### 3.4. Summary and conclusions: combining theoretical and observational approach

Chapter 3 is a perceptive overview of what is functional and what is lexical about modals and other initial Vs in the Czech CVD structure. It also make a clear division between what motivates them as Vs (morphology, negation, ellipsis), and what makes them less than full Vs (lack of aspect, impoverished complement structure).

To conclude the chapter, let us look at what has been achieved so far. I have set up a theoretical concept of Czech CVD structure and argued that CVD has a

character of a multiple verbal element realized in a single clause. I have shown that CVD usually involves a modal in the finite form and a string of subsequent infinitival complements.<sup>80</sup> The notion of the CVD does not yet explain how the whole structure is syntactically derived.<sup>81</sup> Nevertheless, it has an important theoretical status as it establishes that the relevant structure is syntactically tight. Chapter 2 suggested that there are several important factors that explain this ‘tightness’, such as a complex argument structure (jointly realized by the participants in the CVD), single predication, monoclausality etc.

The main premise of the CVD hypothesis states that modal verbs have to have a semi-lexical status in order to be able to participate in the CVD. Therefore, if CVD is a valid concept that can help to examine multiple verbal structures in Czech, there must also be observational evidence of semi-lexical behaviour of Czech modals in grammar.

Whilst the objective of the first two chapters is to derive the semi-lexicity of modal verbs in Czech theoretically, chapter 3 has aimed to supply this evidence. I have demonstrated that Czech modals have strong lexical characteristics by demonstrating their full morphological paradigm, accessibility of the negative prefix *ne-* and ability to be left without their complements as a result of the infinitival ellipsis. On the other hand, I have presented evidence of the functional behaviour of Czech modals. This evidence was more straightforward than in the previous case, consisting of two clear instances: inability to take clausal complements and lacking aspectual counterparts.

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<sup>80</sup> Some CVDs contain aspectual verbs taking on the role of a modal in the structure.

<sup>81</sup> This is a topic of chapter 6.

Consequently, the array of semi-lexical properties identified in the group of Czech modal verbs suggests that they are probably closer to canonical lexical verbs rather than the functional categories on the semi-lexical scale proposed in chapter 2.



## Chapter 4

### *Two types of modals in Czech*

#### 4.1. Introduction: CVDs with double modals

Whilst the objective of the previous chapter was to investigate semi-lexical properties of Czech modal verbs in general, this chapter deals with some of the properties that suggest splitting modal verbs in Czech into two different categories. The types we are going to observe here are characterized by different lexical v. functional relations, giving us their distinct position on the semi-lexical scale.

The existence of the two types of modal verbs that can enter Czech verbal structures is partially responsible for the difficulties with defining modality in Czech. Conveniently, we have already encountered both types above in our very first data containing CVD in chapter 1. Let us repeat it here as (1) below by way of illustration:

- (1) Jan            musel            chtít            začít            studovat    lingvistiku.  
Jan            mustPast3Sg    wantInf    beginInf    studyInf    linguisticsAcc  
‘Jan had to want to begin studying linguistics.’

(1) is an example of a large CVD in Czech, containing multiple V categories. In chapter 1, I have proposed that some of these Vs form a verb cluster. The verb cluster always has to be a part of the CVD and it can involve one or more verbs that do not have access to the subject and object of the sentence. This hypothesis is strictly in accordance with the monoclausal analysis that I employ in the course of this thesis.

Subsequently, only *chtít* ‘want’ and *začít* ‘begin’ in (1) are *cluster verbs* (i.e. able to form a verb cluster). By carrying out several movement tests in chapter 1, we have discovered some distinctive syntactic properties distinguishing these verbs both from the lexical verb *studovat* ‘to study’ and the modal *muset* ‘must’.

Both *muset* ‘must’ and *chtít* ‘want’ belong to the group of modal verbs. The difference between both modals is usually characterized as follows: whilst the former is a modal primarily, the latter expresses modality in a secondary sense. In the semantic sense, *chtít* has a wider/less specific modal meaning than *muset*. This shows that Czech allows double modal constructions, represented by (1); two individual modal verbs can jointly appear within a single CVD in Czech.

The double modals situation in Czech raises two important questions. Firstly, it is necessary to ask what types of modal verbs can co-occur in the CVD. Given the proposal of two types of modals in Czech, it is relevant to ascertain whether the combinations allow members of both types to be in the individual CVD, or whether the CVD structure is restricted to the single type. The second question is related to the role modals play in the CVD. Do all modal verbs involved in the single CVD syntactically behave in the same way, or are their roles different according to their type and/or the position in the CVD? The following data are at the centre of our investigation:

- (2) a. Jan musel chtít začít studovat lingvistiku.  
 Jan mustPast3Sg wantInf beginInf studyInf linguisticsAcc  
 ‘Jan had to want to begin studying linguistics.’
- b. Jan musel začít chtít studovat lingvistiku.  
 Jan mustPast3Sg beginInf wantInf studyInf linguisticsAcc  
 ‘Jan had to begin to want studying linguistics.’
- c. \*Jan chtěl muset začít studovat lingvistiku.  
 Jan wantPast3Sg mustInf beginInf studyInf linguisticsAcc
- d. \*Jan chtěl začít muset studovat lingvistiku.  
 Jan wantPast3Sg beginInf mustInf studyInf linguisticsAcc

In (2a) and (2b), *chtít* ‘want’ and *začít* ‘begin’ can exchange structural positions in the CVD without affecting the grammaticality of the sentence. This is possible due to the fact that they are both cluster verbs. On the other hand, *muset* ‘must’ is not able (by movement or any other syntactic operation) to exchange places with either *chtít* or *začít*. Such a situation renders (2c) and (2d) unacceptable.

This behaviour is important, since it shows not only that both modal types behave very differently within the CVD, but also that *chtít* is more akin to the aspectual verb *začít* than the modal *muset*. Therefore, (2) supports the idea that there are two types of modal verbs in Czech.

#### 4.2. True modal verbs (TMV) and Optional modal verbs (OMV)

It is widely assumed that the two types of modals we have encountered in (2) form two separate groups of modal verbs in Czech. The existence of these groups is originally motivated by the different morphosyntactic properties of their members.<sup>82</sup> The first group, containing ‘basic’ modals, is called *Primary modal verbs* (PMV; they are *muset* ‘must’, *moci* ‘can’, *mít* ‘have to’, *smět* ‘be allowed to’ and arguably *hodlat* ‘intend’). The second group is then referred to as *Secondary modal verbs* (SMV; *chít* ‘want’, *umět* ‘be able to’, *dovolit si* ‘dare’ and arguably *hodlat* ‘intend’).

I consider the reasons for the PMV v. SMV dichotomy to be misleading. The issue overlooked by descriptive grammarians is that members of both PMV and SMV substantially differ from each other in terms of both interpretation and, most importantly, syntactic derivation. Unlike the previous theories accounting for modality in Czech, I aim to base the dichotomy on more formal grounds with respect

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<sup>82</sup> Such as, for instance, ability v. inability to form nominal nouns. See Karlík (1998), Daneš, Grepl & Hlavsa (1987) for a descriptive analysis.

to the whole concept of CVD. I propose that the crucial syntactic properties that differentiate between both groups are in fact derivational properties. In other words, it is possible (if not necessary) to address this issue at the level of syntactic derivation. It will become clear that derivational differences between both types of modality are reflected in other levels of the language representations as well. For instance, only the first type can have epistemic interpretation, and only the second type can denote (albeit partially) events. Astonishingly, both facts remain overlooked by traditional Czech grammars.

To point out the different theoretical approach, I will henceforth call PMVs *True modal verbs* (TMVs) and refer to SMVs as *Optional modal verbs* (OMVs). Together with aspectual verbs, OMVs are syntactically cluster verbs. Thus in our data above, *muset* ‘must’ is a TMV, *chtít* ‘want’ is an OMV and *začít* ‘begin’ is an example of an aspectual verb. Both *chtít* and *začít* are then two instances of cluster verbs.

#### 4.3. Syntactic evidence for the TMV v. OMV dichotomy

I propose that there is both syntactic and semantic evidence for distinguishing between TMVs and OMVs in Czech. The syntactic evidence is both of a derivational and non-derivational character. However, I also propose that certain semantic properties of modality<sup>83</sup> apply to both TMVs and OMVs, giving us reason to maintain the modal categorization of OMVs.

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<sup>83</sup> These are dealt with in chapter 7.

#### 4.3.1. Non-derivational syntactic evidence: the issue of nominalization

First, there is what can be called the *non-derivational* syntactic evidence for the TMV v. OMV dichotomy. With some degree of simplification, it can be characterized as ‘stand alone’ or ‘morphosyntactic’ in a very broad sense, as it is inherent to a modal verb prior to its entering derivational structure. For example, TMVs lack the ability to nominalize, which is present in OMVs. The non-derivational syntactic evidence does not directly follow from the syntactic hypothesis regarding Czech CVD presented in this thesis.

The issue of nominalization has been mentioned since the early stages of generative syntax (Lees 1960, Chomsky 1965). However, it comes to the fore in Chomsky (1972), where it is analysed against the background of the relation between two basic components of grammar, the transformational component (syntax) and the lexicon (base). It is a theoretically established fact that the extension of one component involves the reduction of the other. The theories dealing with nominalization have two options: either to elaborate the transformational component, or to extend the lexicon (Chomsky 1972: 13-15).

The transformational component is employed for the analysis of nominalization in Lees (1960), Lakoff (1965) and partially Chomsky (1965). The assumption is that the sentence *John has refused the offer* is transformed into *John’s refusing the offer* or *John’s refusal of the offer* by the application of some process in syntax.

In contrast, Chomsky (1972: 17-18) argues against involving syntactic transformations as responsible for nominalization. Instead, he assumes that nominalization is part of the lexicon, and calls this assumption accordingly a *lexicalist*

*hypothesis*. The strongest argument for the lexicalist hypothesis is related to the issue of productivity. Chomsky recognizes two types of nominalization: gerundive nominalization (*refusing*) and derived nominals (*refusal*). The principle of gerundive nominalization is productive in English grammar, and hence supports the transformational hypothesis. Derived nominals, on the other hand, are very different. The productivity is restricted, and the semantic relations between the verbal proposition and the derived nominal are “quite varied and idiosyncratic” (Chomsky 1972: 16). Derived nominals therefore pose a serious problem for the transformational approach. The proposed process in syntax that results in the transformation of a predicate into a derived noun cannot be determined with any regularity due to the idiosyncratic character of the examples we are dealing with.<sup>84</sup>

After Chomsky (1972), researchers argue for a unifying account of nominalization that would cover both basic types of nominals. However, subsequent theories are split into those advocating the syntactic solution (Levin & Rappaport 1988) and those proposing a solution within strictly semantic terms (Ryder 1991). Grimshaw (1990) argues for further differentiation of non-gerundive nominalizations according to the relation between the nominal and verbal properties they contain. These properties are captured by the argument structure of nominals. According to Grimshaw, nominalization in general yields either transformational units (*gerunds* and *complex event nominals*), or lexical units (*event nominals* and *result nominals*).

Works within Czech syntax are mostly representative of the transformational approach towards nominalization, although they are not motivated within the generative framework. Karlík & Nübler (1998) propose that the nominalization of Czech predicates is a syntactic process that involves the transformation of the

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<sup>84</sup> Chomsky (1972: 20) argues that for instance, *John's deeds* are clearly not derived from *things which John did*, and points out that it is difficult to explain the transformation of *I read all of what John wrote* into *I read all of John's writings* due to the existence of *I read all of John's critical writings* etc.

‘nominative position’ into the ‘genitive position’.<sup>85</sup> The process of nominalization follows another transformational process in syntax: passivization. Karlík & Nübler (1998) argue that both the active and the passive predicates undergo nominalization, which always results in the subject in genitive case. For instance, the active structure *Petr píše dopis* ‘Petr is writing a letter’ involves nominalization *psaní Petra* ‘writing of Petr’, whereas the passive *Dopis je psán Petrem* involves the nominalization *psaní dopisu* ‘writing of letter’.

This position is criticized by Veselovská (2001b) on the grounds of generative syntax. The term ‘transformation’ has been replaced by ‘movement’ during the development of the syntactic framework. Nevertheless, both terms would have to involve a succession of fairly complex and productive processes, licensed within the syntactic structure. According to Veselovská, the transformation hypothesis in Karlík & Nübler (1998) has to explain how the actual transformations work syntactically instead of just assuming they simply happen as ‘kafkaesque metamorphoses’. As an alternative, Veselovská (2001b) proposes a unifying syntactic structure for all types of nominalizations in Czech that is specific in containing three possible levels of insertion into the derivation.<sup>86</sup> Such a proposal involves to some extent both a transformational and a lexicalist explanation. The different types of nominals result in the different levels of their insertion into the syntactic structure.

I make a case that it is impossible to maintain the strict transformational approach because of the idiosyncratic character of certain types of deverbal nominals in Czech. For instance, both *číst* ‘read’ and *psát* ‘to write’ productively involve gerundive-type nominalization (*čtení* ‘reading’ and *psaní* ‘writing’ respectively). However, only the former verb has the derived nominal counterpart (*číst* → *četba*

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<sup>85</sup> The term ‘position’ is defined within the framework of valency syntax that the authors use.

<sup>86</sup> This hypothesis is first presented in Emonds (1997)



‘something read’). A similar event nominal, although imaginable, does not exist in case of the latter verb (*psát* → *\*pisba*). I assume that the original lexicalist hypothesis is more convenient to explain the occurrences of nominalization.

The in-depth description of nominalized structures in Czech is not the task of this section. I will henceforth assume Veselovská’s application of the different insertion-levels as the background theory, but, for the reasons of simplifying the overcomplicated issue, I will treat nominalization simply as a ‘relation’ between two or more lexical entries that is available for a certain type of Czech modals. I further assume that this relation is caused by the fact that the lexical entries in question refer semantically to one single event:

$$(3) \text{ E } (-\text{N } +\text{N})$$

In (3), E stands for an event. I propose that E is obligatorily realized by a lexical verb as implied by its semantics. +N is a nominal feature, and –N represents a lack of the nominal feature. An event can be realized by employing both features. In Czech grammar, (3) works with regularity where full lexical verbs are concerned. This is not surprising considering that lexical verbs realize events. Thus also verbs that are morphologically more complex, such as *zprostředkovavat* ‘mediate’, have their nominal counterparts (*zprostředkovávání* ‘mediation’).

All Czech modal verbs completely resist derived nominalization. Crucially for our theory, however, OMVs are open to the gerundive type of nominalization and enter the relation described in (3). We will see later that this correlates with their semantic ability to partially denote events. Therefore, OMVs can, to some degree, undergo nominalization. The following table demonstrates the situation:

Table 1: Nominalization of Czech modals

OMV	Gerundive type nominals
<i>chtít</i> ‘want’	<i>chtění</i> ‘wanting’
<i>umět</i> ‘be able to’	<i>umění</i> ‘able-ing’
<i>dovolit si</i> ‘dare’	<i>dovolení si</i> ‘dare-ing’
TMV	
<i>Muset</i> ‘must’	* <i>musení</i> ‘must-ing’
<i>moci</i> ‘can’	* <i>mocení</i> ‘can-ing’
<i>smět</i> ‘be allowed’	* <i>smění</i> ‘allow-ing’
<i>mít</i> ‘have to’	* <i>mění</i> ‘having to’
Inconclusive	
<i>hodlat</i> ‘intend’	? <i>hodláni</i> ‘intending’

The table above shows that the examples with certain, visible nominalization patterns are those containing OMVs. It is obvious that the nominalization points towards two syntactically distinctive groups of modals.

Some modal nominals in Czech appear to have derived noun counterparts as well. This is due to the high degree of idiosyncrasy and ambiguity of such items in the lexicon. For instance, Czech *umění* ‘ability to do something’ can also mean ‘art’, whilst ability itself can be expressed by the noun *schopnost*. For the ungrammatical paradigm \**mocení*, there exists the noun *moc* ‘power’, which obviously has wider semantics. Similarly, the existence of noun *chtíč* ‘lust’ creates the question of whether it can be derived from *chtít* ‘want’. These variants differ syntactically; nominalized verbs must be followed by infinitival complements in those cases where their verbal counterparts have also only infinitival complements. The simple noun *schopnost*

‘ability’ does not require an infinitival complement. The syntactic difference between the gerundive-type nominal *umění* ‘ability’ and *schopnost* ‘ability’ is demonstrable on several structures:

- (4) a. Jaké má schopnosti?  
       how have3SgPres abilitiesAcc  
       ‘What abilities does he have?’
- b.\* Jaké má umění?  
       how have3Sg able-ingAcc  
       ‘What ability does he have?’
- c. A co Janovo umění psát? N<sub>v</sub>  
       And what JanNeut able-ingAcc writeINF  
       ‘What about Jan’s ability to write?’
- d. Umění 21. století. N  
       Art 21. centuryGen  
       ‘Art of the 21<sup>st</sup> Century.’

The examples in (4b) show that derived nominals cannot easily enter the syntactic structure in object position. The data in (4c) and (4d) capture the ambiguity: the noun phrase *Janovo umění psát* ‘Jan’s ability to write’ in (4c) has a verb phrase counterpart in *Jan umí psát* ‘Jan is able to write’. They both refer to one event. In contrast, there is no such verb phrase counterpart when the noun *umění* has the ‘art’ meaning in (4d). Consequently, (4d) cannot have an event interpretation.

All these examples show the same complications already realized by Chomsky (1971). It is difficult to establish any syntactic/semantic correlation between modals

and their potential derived counterparts. In other words, I assume that we cannot justify that, for instance, *umění* is in fact derived from *umět* at all.

#### 4.3.2. Derivational syntactic evidence

The existence of *derivational* syntactic evidence for the TMVs v. OMVs dichotomy is substantial for the development of our argument. There are two main instances of such evidence. Firstly, let us analyse the one involving the position of modals within the CVD structure.

##### 4.3.2.1. Placement and co-occurrence restrictions in the CVD structure

We have noticed that TMVs could not occupy the same positions in the CVD structure as OMVs; nor could they exchange their position freely with OMVs without affecting the acceptability of the sentence. From this point of view, TMVs are bound in the leftmost position within the CVD structure. OMVs, on the other hand, can occupy this position optionally, given that there is no TMV in the structure. Let us repeat the relevant data:

- (5) a. Jan    má (TMV)    chtít (OMV)    číst        tu    knihu.  
         Jan    have3Sg Pres wantInf        readInf    that   bookAcc  
         ‘Jan has to want to read that book.’
- b. \* Jan    chce (OMV)    mít (TMV)    číst        tu    knihu.  
         Jan    want3Sg Pres   haveInf        readInf    that   bookAcc  
         ‘Jan wants to have to read that book.’

The structure in (5a) is acceptable since it contains the TMV in its obligatory position. On the other hand, the ordering in (5b) yields ungrammaticality. I assume that this is due to the failure of the two complementary locality conditions within the CVD: the OMV is forced to occupy the leftmost position of CVD whilst there is a TMV present in the structure; the TMV appears outside its obligatory position.

More derivational evidence for the split between Czech modal verbs is represented by the whole complex of combinatory properties of both TMV and OMV within a single CVD. These properties directly follow from the derivation of the CVD containing modal verbs.<sup>87</sup> Since the position of both the TMV and the OMV is to a considerable extent determined within the derivation, this also affects the whole set of combinatory relations they can enter. A TMV cannot, for instance, co-occur with another TMV in a single CVD, since its position is unique. The relevant double modal constructions are captured in (7) below:

- (6) a. Jan chce (OMV) umět (OMV) číst tu knihu.  
 Jan want3SgPres ableInf readInf that bookAcc  
 ‘Jan wants to be able to read that book.’
- b. Jan musí (TMV) umět (OMV) číst tu knihu.  
 Jan must3SgPres ableInf readInf that bookAcc  
 ‘Jan must be able to read that book.’
- c. \*Jan chce (OMV) mít (TMV) číst tu knihu.  
 Jan want3SgPres have toInf readInf that bookAcc
- d. \*Jan musí (TMV) mít (TMV) číst tu knihu.  
 Jan1Sg must 3Sg Pres have toInf read Inf that book Acc  
 ‘Jan must have to read that book.’

<sup>87</sup> Chapter 6 proposes the concrete derivational theory for the Czech CVD.

The data in (6) demonstrate all combinatory options of double modal constructions in Czech. These can involve either modals of the same type ((6a) and (6d)), or a combination of both types ((6b) and (6c)). There are two cases of ungrammaticality observed in (6).

Firstly, (6d) is ruled out because it contains the co-occurrence of two TMVs in one CVD structure. Our observation of the placement restrictions within the CVD suggests that this is not possible. Secondly, (6c) is ungrammatical, which demonstrates that the OMVs cannot precede TMVs in the CVD structure. In other words, they cannot assume the positions of TMVs when both types of modals co-occur.<sup>88</sup> The examples (6a) and (6b) do not involve any co-occurrence problems and are grammatical.

#### 4.3.3. Summary and conclusion

To conclude the syntactic observation, let us revise what has been said so far. We have seen that the principle of nominalization, whether characterized as a transformation of a verb phrase into a noun phrase or as a simple relation between two elements in the lexicon, suggests that there are two types of modal verbs in Czech. Modals belonging to the first type, TMVs, could not be nominalized, whereas members of the second type, OMVs, allowed gerundive nominalizations. For instance, whilst there is no gerundive nominal in case of *muset* ‘must’ (\**musení* ‘must-ing’), *umět* ‘want’ has one in the form of *umění* ‘able-ing’.

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<sup>88</sup> This is because the leftmost position of the CVD is the main semi-lexical position, and TMVs are clearly prototypical semi-lexical categories. They have a more functional status than OMVs, a fact that will become even more apparent at the end of chapter 4. The syntactic motivation for the relative positions of both types of modal verbs will then be presented in chapter 6, to explain the status of the leftmost, TMV position in the derivation of the modal CVD and propose under which circumstances it can be occupied by less functional elements such as OMVs.

The second observation concerned the combinatory properties of TMVs and OMVs in double modal constructions, which are frequent in Czech. We have seen that several co-occurrences cause grammaticality issues, generalized in the following way:

- (7) a. Czech modal structures prevent any coexistence of two TMVs in a single sentence.
- b. Both TMV-OMV and OMV-OMV structures are possible, yielding double modal constructions.
- c. An OMV-TMV structure is ruled out.

I propose that (7) describes the situation of double modals in Czech.

#### 4.4. Semantic evidence for the TMV v. OMV dichotomy

In this section, I will investigate semantic evidence for the TMV v. OMV dichotomy. Semantic evidence is divided into two kinds: ability/inability to assume epistemic readings and ability/inability to denote events.

##### 4.4.1. Epistemic interpretation of TMVs

One of the strong semantic aspects of modal verbs and modality in general is the ability to assume epistemic meaning.<sup>89</sup> TMVs express epistemic meaning easily:

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<sup>89</sup> The whole phenomenon of root v. epistemic is dealt with in chapters 8, 9 and 10. It is mentioned here only as contributing to the TMV v. OMV dichotomy.

- (8) a. Jan musí studovat lingvistiku.  
 Jan must3SgPres studyInf linguisticsAcc  
 ‘Jan must study linguistics.’
- b. [Jan is obliged to study linguistics] root
- c. [It is (necessary) the case that Jan studies linguistics] epistemic

In the example above, (8b) and (8c) are interpretations of the sentence in (8a), which contains the TMV *musí* ‘must’. The modal *musí* is ambiguous to the extent that it can have both *epistemic* and *root* readings. (8b) represents a root reading. Under the root interpretation, *Jan* is the subject (Agent) of the modal CVD *musí studovat lingvistiku* ‘must study linguistics’. If the modal gains the epistemic interpretation (8c), it has scope over the subject *Jan*. The role of *musí* in this case is to evaluate the truth-values of the sentence. Let us now consider an OMV in exactly the same circumstances:

- (9) a. Jan chce studovat lingvistiku.  
 Jan want3SgPres studyInf linguisticsAcc  
 ‘Jan wants to study linguistics.’
- b. [Jan wants to study linguistics] root
- c. \*[It is wanted that Jan studies linguistics] epistemic

The example in (9) demonstrates the inability of the OMV *chce* ‘want’ to scope over the subject ‘Jan’ and form the structure that can be interpreted as epistemic.

There is a considerable difference between TMVs and OMVs regarding their root/epistemic difference. The ability to assume the epistemic interpretation applies to



all Czech TMVs with one exception, the modal verb *smět* ‘be allowed’. However, the syntactic evidence points out that *smět* has the TMV characteristics. It cannot be nominalized (\**smění*), and cannot co-occur with other TMVs in the CVD (*Jan musel smět číst tu knihu* ‘Jan had to be allowed to read that book’). From this perspective, its resistance to acquiring epistemic interpretation has to be understood as a manifestation of its specific/idiosyncratic semantics.

#### 4.4.2. (Partial) Event denotation of OMVs

Another type of semantically based evidence that differentiates between TMVs and OMVs is manifested by the level of their participation in the process of denoting events. For the following analysis, I will adopt the theoretical presumptions of the event semantics first developed in Davidson (1967).

Davidson argues that events are entities that can be spatiotemporally defined. The crucial assumption is that expressions of natural language can refer to events/denote events, which provides a powerful tool to explain such complicated issues as verb semantics, tense and aspect relation, adverbial semantics etc. Due to its explanatory power, Davidsonian event semantics has grown into a rich and ever-expanding field, which has recently undergone an influential revival in the shape of a ‘Neo-Davidsonian turn’. The works within this area include, among others, Higginbotham (1985, 2000) and Parsons (1990, 2000). Davidson originally introduced the *event argument* to account for the semantics of action verbs. The main claim of the Neo-Davidsonian approach is that it is present not just in verbs, but also adjectives, nouns and prepositions. In general, the Neo-Davidsonian shift caused the

event argument to be seen as a ‘trademark for predicates’ (Maienborn & Wöllstein 2005).

Following event denotation semantics, I propose that the whole CVD structure, of which both OMVs and TMVs are members, denotes a single event. The understanding of the CVD in terms of event denotation contributes semantically to our understanding of how the complexity of the CVD structure is achieved. Recall the example of the CVD repeated in (10) below:

- (10) Jan    **musel**        **chtít**    **začít**        **studovat lingvistiku.**  
Jan mustPast3Sg wantInf beginInf studyInf linguisticsAcc  
‘Jan had to want to begin studying linguistics.’

There are syntactic reasons to see the section emphasized in bold as an example of a CVD in Czech. The argument here is that semantic characteristic also should show the tendency of the CVD towards complexity. The process of event denotation within the CVD supports the argument.

The single event denotation is not understood here as a sum of individual events denoted by members of the CVD. For instance, the TMV *musel* ‘had to’ in (10) cannot denote an event in itself. Also the remaining infinitives (cluster verbs *chtít* ‘want’ and *začít* ‘begin’, the lexical verb *studovat* ‘study’) do not denote events individually – rather, they partake in the process in which the CVD denotes a single event. For example, whilst there is no event of “musting”, neither are there individual events of ‘wanting’ and ‘beginning’ in (10). Instead of representing individual events, *chtít* and *začít* both *participate* in the CVD event denotation, which is described as a single and complex process. Following what has been said so far, I will assume the

following generalization and then outline the ability of OMVs and aspectual verbs to partially denote events on the relevant data:

(11) TMVs – lack the ability to denote events completely

Cluster verbs (OMVs, aspectual verbs) – partially denote events

Lexical verbs – denote (complete) events

CVDs – denote complex events

(11) suggests the difference between TMVs and OMVs based on the event denotation. Both the OMV *chtít* ‘want’ and aspectual verb *začít* ‘begin’ in the example (10) have the ability to denote partial events and take an active part in the complex event denotation. This ability is not present in both verbs in the same way – the degree of participation in the complex event denotation can differ according to the semantic properties of the participants. The following data show the difference (AV is ‘aspectual verb’):

(12) a. Jan začal číst tu knihu. AV  
Jan begin3SgPast readInf thatAcc bookAcc  
‘Jan began reading that book.’

*therefore*

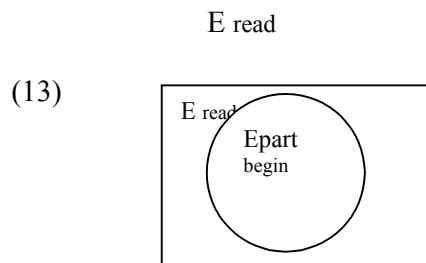
b. Jan četl tu knihu.  
Jan read3SgPast thatAcc bookAcc  
‘Jan read that book.’

c. Jan chtěl číst tu knihu. OMV  
 Jan want3SgPast readInf thatAcc bookAcc  
 ‘Jan wanted to read that book.’

*\*therefore*

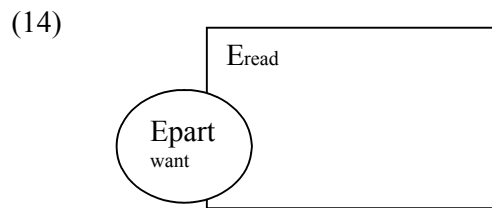
d. Jan četl tu knihu.  
 Jan read3SgPast thatAcc bookAcc  
 ‘Jan read that book.’

(12) constitutes a test for different types of event denotation within the CVD structure. (12b) can be interpreted as logically following from (12a). If it is true that Jan began reading the book, it is also true that he was reading that particular book at the same time (and may or may not be still reading now). The aspectual verb *začít* ‘begin’ therefore entails a logical implication, created by the situation of ‘inclusiveness’. I will interpret the concept of inclusiveness in relation to the event denotation simply as a process in which the ‘act’ of beginning to do something is semantically fully included in the ‘act’ of doing something. The question whether all aspectual verbs behave in this way regarding the event denotation is a matter of further investigation. For now, it is important to note that Czech aspectual verbs denote partial events containing the specific property of *inclusiveness*. This can be outlined as follows:



The square in (13) represents the (complex) event of ‘reading’ and the circle represents the partial (Epart) event of ‘beginning’, which is included within the event of ‘reading’.

On the other hand, (12c) does not imply (12d). It is not necessarily the case that if Jan wants to read a book, he is also reading it. The logical assumption that the truth of Jan wanting to read a book implies the truth of him reading the book fails. Consequently, this prevents the partial event denoted by *chtít* ‘want’ to be semantically fully included in the event denoted by the verb *číst* ‘read’. I assume that the following is applicable to all OMVs:



As in the previous example, the square represents the (complex) event of ‘reading’ and the circle represents the partial event of ‘wanting’.<sup>90</sup>

Both semantic structures in (13) and (14) show that the lexical verb *číst* ‘read’ still has a dominant position in denoting the complex event. This prevents the understanding of the complex event as a result of two individual sub events simply added together. The difference between the event status of *číst* ‘read’ on one hand and *chtít* ‘want’ or *začít* ‘begin’ on the other reflects the fact that the former is a lexical verb, whereas the latter are semi-lexical.

<sup>90</sup> Note that both diagrams in (13) and (14) are identical with respect to one thing – partial event denotation

4.4.2.1. The link between event denotation and the nominalization process; +/-  
E feature and *E<sub>part</sub>*

Nominalization has been already introduced as one of the syntactic factors distinguishing between TMV and OMV. The aim of this section is to show that the ability to nominalize is connected to the ability to denote individual events. In order to do so, I will first propose that the event semantics argument can be captured by the introduction of +/- E feature:

- (15)
- |               |                       |
|---------------|-----------------------|
| TMVs          | (-E)                  |
| OMVs          | (+E <sub>part</sub> ) |
| Lexical verbs | (+E)                  |

Whilst -E can be applied to TMV and +E to lexical verbs, the question is how the feature system captures partiality in denoting events observed in OMV and other cluster verbs. To be able to account for partial events, I assume that the following takes place where event interpretation of the OMV is concerned:

- (16)  $+E \rightarrow E_{\text{part}}$

The additional rule in (16) expands the feature system without affecting the distinctiveness of +/-E. It accounts for the role partial denotation plays in the event semantics argument. In order to link event denotation and the nominalization process together, I propose the following general rule:

- (17) The nominalization process is possible if and only if the verb in question contains +E feature

(17) implies that OMVs, having a greater ability to nominalize, also semantically differ from TMVs in terms of expressing events. It basically captures the same process both on the level of morphosyntax (represented by nominalization) and semantics (represented by event denotation (+/- E)). The syntactic and semantic factors are, therefore, interrelated.

Let us now demonstrate the significance of nominalization/event denotation on the following syntactic phenomenon: The majority of Czech VPs are able to become a subject of the sentence by referring to the particular event they represent. Since it is directly related to the link between nominalization and event denotation, I expect this process to contribute to the TMV v. OMV dichotomy in the way described above. I will henceforth use the technical term *VP subjectivization* to refer to the process by which a VP gains the subject status. Syntactically, subjectivization enables a derived VP to be inserted into the structure in the subject position. However, with the exception of infinitival subjectivization (discussed below together with other types), the whole VP has to be nominalized prior to entering a subject position.

One of the reasons for subjectivization is to refer to the VP as an event, and the principle is productive in the case of fully lexical verbs (having the +E feature). For instance, the VP [*četl knihu o lingvistice*] ‘read book about linguistics’ becomes a subject when a speaker wants to emphasize the event of reading the book. There are three different types of subjectivization in case of the lexical verb *číst* ‘read’:

- (18) a. *Jan četl knihu o lingvistice.*  
Jan read3SgPast bookAcc about linguistics.  
‘Jan read a book about linguistics.’

- b. *Číst knihu o lingvistice* se vyplácí.  
 readInf bookAcc about linguistics Refl pay3SgAsp  
 ‘To read a book about linguistics pays off.’
- c. *Čtení knihy o lingvistice* se vyplácí.  
 readingNom bookGen about linguistics Refl pay3SgAsp  
 ‘Reading a book about linguistics pays off.’
- d. *Četba knihy o lingvistice* se vyplácí.  
 readNom bookGen about linguistics Refl pay3SgAsp  
 ‘The reading of a book about linguistics pays off.’

The examples in (18a-d) demonstrate the ability of the verb *číst* ‘read’ to become a part of the subject of the sentence as a result of syntactic subjectivization (each subject in (18) is italicized). As (18) shows, there are several different types of subjectivization. The one making use of the infinitival structure, represented by (18b), is irrelevant for our argument since it does not involve nominalization, and as such does not distinguish between OMVs and TMVs.<sup>91</sup>

The other two types of subjectivization in (18) are enabled by the ability of the lexical verb to nominalize. (18c) is a case of gerundive subjectivization. The nominalization of the verb *četl* ‘read’ into a noun *čtení* ‘reading’ in this case triggers the change of case of the complement from the accusative *knihu* into the genitive *knihy*, which is an obligatory feature following the nominalization of simple predicates. The nominalized VP in subject position in (18d) then involves a derived nominal *četba* ‘a read’. The same case change as in (18c) appears.

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<sup>91</sup> The fact that both OMVs and TMVs can become infinitival subjects is observed further in (19) and (20), respectively.



I have previously suggested that the OMVs denote partial events (they have the +E<sub>part</sub> feature). They can also undergo gerundive nominalizations. Given these observations, I expect them to be part of subjectivized CVDs. This is indeed the case in (19) below, which contains the OMV *chtít* ‘want’:

- (19) a. *Jan chtěl číst knihu o lingvistice.*  
 Jan want3SgPast readInf bookAcc about linguistics.  
 ‘Jan wanted to read a book about linguistics.’
- b. *Chtít číst knihu o lingvistice se vyplácí.*  
 wantInf readInf bookAcc about linguistics Refl pay3SgAsp  
 ‘It pays off to want to read a book about linguistics’.
- c. *Chtění číst knihu o lingvistice se vyplácí.*  
 wantingNom readInf bookAcc about linguistics Refl pay3SgAsp  
 ‘Wanting to read a book about linguistics pays off.’
- d. Ø (no derived nominals of OMVs)<sup>92</sup>

Again, (19b) involves the case of the infinitival subjectivization that is widely open to all but true auxiliaries in Czech. The example (19c) is the most relevant for our argument. As in (18c) above, which contained a fully lexical verb and a simple VP, the OMV *chtít* ‘want’ gets a nominal form to allow its placement in subject position

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<sup>92</sup> There are actually derived nominals of certain aspectual verbs (AV) in Czech:

- (i) *Jan začal (AV) číst tu knihu.*  
 Jan begin3SgPast readInf thatAcc bookAcc  
 ‘Jan began reading the book.’
- (ii) *Začátek četby té knihy se Janovi moc nezamlouval.*  
 Beginning (N) readGen (N) thatAcc bookGen Refl JanDat much NEGlke3SgPast  
 ‘Jan didn’t like much the beginning of reading that book.’

This shows that Czech AVs are more lexical than OMVs.

of the sentence, this time as part of a subject CVD. Nevertheless, due to the fact that the subject is a CVD rather than VP, the case of the complement of the lexical verb remains unaffected by the subjectivization process.

So far, the data in (18) and (19) suggest that both lexical verbs and OMVs have to be nominalized to become a part of the subject phrase that is able to denote events. Since it is available also to TMVs (containing the –E feature), let us now turn to their subjectivization pattern, in (20) below:

- (20) a. *Jan musel číst knihu o lingvistice.*  
 Jan must3SgPast readInf bookAcc about linguistics.  
 ‘Jan had to read a book about linguistics.’
- b. *Muset číst knihu o lingvistice se vyplácí.*  
 wantInf readInf bookAcc about linguistics Refl pay3SgAsp  
 ‘To have to read a book about linguistics pays off.’
- c. Ø (no gerundive nominals of TMVs)
- d. Ø (no derived nominals of TMVs)

The data in (20) show that TMVs can become a part of the subject only by assuming the infinitive form. This option still contributes to distinguishing TMVs as semi-lexical categories from the functional verbs that, naturally, cannot be subjectivized at all. However, infinitival subjectivization does not rely on the nominalization principle and is not a clear case of event denotation.<sup>93</sup> The inability of TMVs to be part of

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<sup>93</sup> This is because the infinitive retains the characteristics of a verb.

nominal subjects contributes to their distinction from OMVs, as well as demonstrating the link between event denotation and nominalization.

I have proposed in this section that the syntactic and semantic evidence for the dichotomy between TMVs and OMVs are interrelated. It has been shown that this fact is manifested by subjectivization, i.e. the process by which a verbal element becomes a subject of the sentence. There is a semantic motive for subjectivization – to refer to the event status of a verbal element. To be able to do that, a verb has to undergo nominalization.

#### 4.5. Summary of the TMV v. OMV dichotomy

This chapter investigated the dichotomy of two types of modal verbs in Czech and its impact on both syntactic and semantic analysis. As there has so far been an attempt to offer a comprehensive and concise syntactic study of modals in contemporary Czech, the differences between OMVs and TMVs are often, whilst noted by researchers, sidelined for the purpose of typological simplicity.

In contrast, I suggested an exhaustive account of both syntactic and semantic differences between TMV and OMV groups. The following table represents a summary of what has been observed.

Table2: *The evidence for TMV v. OMV dichotomy*

SYNTACTIC	NON-DERIVATIONAL	Various individual morphosyntactic properties (nominalization)
	DERIVATIONAL	Locality restrictions – obligatory leftmost position
		Combinatory relations, co-occurrence in the sentence
SEMANTIC	Epistemic interpretation	
	Event interpretation (correlates with nominalization)	

As shown in the table above, I have distinguished between the non-derivational and derivational syntactic evidence for the TMV v. OMV dichotomy. The fact that OMVs, as opposed to TMVs, can nominalize is not based on any derivational process in syntax. Moreover, as mentioned before, I have proposed that it is not possible to understand nominalization itself fully in terms of the syntactic process either. Rather, we have seen that it is substantially complicated by the amount of idiosyncrasy it involves, as is clearly indicated by the example *číst/čtení/četba* ‘read’V/’read’Ning/’read’N v. *psát/psaní/\*pisba* ‘write’V/’write’Ning/\*’write’N.

Another type of evidence found in syntax concerns the relative positions of TMVs and OMVs in the CVD structure. I have introduced the situation of double modal constructions in Czech, and shown that they involve syntactic restrictions regarding the positions and co-occurrence of both modal types. For instance, the data showed that TMVs have to occupy the leftmost position in the CVD structure, and that co-occurrences of two TMVs in a single CVD structure are ruled out as a result of

this requirement. I will analyze this behaviour further in chapter 6, which will explain what causes the observed ungrammaticalities in the process of deriving the CVD structure, and why they are not mere stipulations.

Finally, we have seen some strong semantic evidence for the TMV v. OMV dichotomy. The data suggested that only TMVs are able, for instance, to distinguish between root and epistemic readings. This will also be significant in the latter part of the thesis, which deals extensively with the interpretation of Czech modal verbs (modal meaning). Event denotation is a second key factor determining the semantics of TMVs and OMVs. Whilst the former cannot denote events, the observation showed that the latter can participate on the event denotation of the CVD.

Table 3 summarizes how the individual modal verbs behaved whilst being tested for all relevant and restrictive properties mentioned in this chapter.

Table 3. *The TMV v. OMV dichotomy in Czech*

Type of modal		Nominalization	Obligatory leftmost position	Co-occurrence with a same-type modal in the CVD	Epistemic interpretation	Partial event interpretation
TMV	muset	-	+	-	+	-
	moci	-	+	-	+	-
	mít	-	+	-	+	-
	smět	-	+	-	-	-
OMV	chtít	+	-	+	-	+
	umět	+	-	+	-	+
	dovolit	+	-	+	-	+
	is					
TMV/OMV	hodlat	+(partially)	+	?	-	+

## Chapter 5

### *Czech modal verbs and the Lexicon: the unified lexical entry*

### 5.1. Introduction: the role of (infinitival) subcategorization

The discussion so far suggests the following implications for Czech modal verbs:

#### (1) Modals

- a) are semi-lexical members of a CVD, occupying both finite and non-finite positions in the CVD;
- b) form two significant subgroups (TMV and OMV) according to their behaviour in relation to a);
- c) are able to convey modal meaning.

The generalizations in (1) concern both the syntactic and the semantic behaviour of Czech modal verbs. (1c) clearly distinguishes modals from other potentially semi-lexical verbs found in the Czech lexicon, such as aspectual verbs. This chapter focuses on the way modal verbs are represented in the Lexicon. I will make two initial theoretical proposals: firstly, Czech modal verbs stand apart from other verbs in the Lexicon due to their unique lexical entries. Secondly, these lexical entries share a subcategorization frame that facilitates the insertion of Czech modals into the syntactic environment described in (1a).

It has already been observed that Czech modals have the ability to form a V+Vinf structure. It is important to note that the term CVD (Complex Verbal Domain) intentionally avoided any phrasal implications. Its objective was to show that Czech modals combine with other verbs to project a complex structure and that the verbal complement of the modal can only be a non-finite V. I will now investigate how this behaviour is reflected by the principle of subcategorization.

## 5.2. The History of the Phenomenon: Extended Classical Subcategorization

The mechanism of subcategorization, or selection for a syntactic category, has formed one of the central parts of the generative framework since Chomsky (1965). Naturally, the understanding of this mechanism changed throughout the development of generative syntax as a whole, in reaction to changes in the framework itself. We can trace three major phases during this process.

The first phase involves the introduction of the *classical subcategorization frame* in Chomsky (1965). Chomsky argues for a feature of the form +\_\_YP<sup>94</sup> that indicates a complement selection of different classes of verbs. He suggests that all lexical entries must contain information related to the phonological and semantic component of the grammar, as well as the transformational part of the syntactic component of the grammar and the proper placement of lexical entries in sentences (Chomsky 1965: 87). The introduction of syntactic features shows similarities with the way distinctive features were presented in phonology. In Chomsky (1965: 84), each lexical entry is a pair (D, C), where D is a phonological distinctive feature matrix and C is a collection of specified syntactic features, or a *complex symbol*. The complex symbol of an English verb ‘frighten’ would contain *category feature* +V specifying ‘frighten’ as a verb, *strict subcategorization feature* +\_\_NP, and negatively specified *selectional feature* – [+N] \_\_ [–Animate].<sup>95</sup>

Generally speaking, a set of syntactic features ensures that the lexical entry is inserted into well-formed structures, generated by the syntactic component. Chomsky agrees that lexical entries contain semantic information as well. However, this

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<sup>94</sup> Chomsky lexically stipulates only the plus value for this feature; see Chomsky (1965, Ch. 2).

<sup>95</sup> Chomsky (1965:165). Whilst strictly subcategorization features are responsible for the transformational (rewriting) rules, selectional features assure the proper placement of lexical entries in the structure. Hence the selectional feature – [+N] \_\_ [–Animate] specifies that ‘frighten’ cannot appear in the context *sincerity\_\_justice*.



information cannot tell us anything about the syntactic structure. He suggests that a feature can be called “semantic” if and only if it is not mentioned in any syntactic rule.<sup>96</sup>

During the first phase, subcategorization features were of a purely phrasal character. For instance, in the case of the predicate subcategorization, the features were developed to mirror the syntactic configuration.<sup>97</sup> This approach was not without problems. One of the major difficulties with Chomsky’s concept of subcategorization was that it was too abstract. It brought together a number of factors that could be, in fact, more profitably tackled as separate entities, such as theta-role assignment and the location of the complement in respect of its head.<sup>98</sup>

Furthermore, Chomsky’s subcategorization could not explain the relevant contrasts captured by the pairs of verbs both selecting the same phrasal category. Emonds (2000: 37) identifies this difficulty using the example of verbs *reside* and *glance*. Both require a PP complement, thus the formalization

(2) *reside/glance*, V, +\_\_PP.

Emonds argues, however, that the +\_\_PP feature cannot account for the contrast of prepositions involved in (3), nor for the distinction between both verbs in (4):

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<sup>96</sup> Chomsky (1965: 142).

<sup>97</sup> This includes a word order within head-complement combination. Recently, Pesetsky (1991: Ch1) shows how the head-initial/head-final parameter was reflected by the subcategorization feature. If a verb selects an NP for its complement, the form for head-initial languages like English and Czech will look like [+ \_\_ (NP)], whilst for head-final languages (Japanese), the form will be [(NP) \_\_].

<sup>98</sup> Pesetsky (1991: Ch1) correctly notes that the head – complement order should not be a subcategorization feature of a lexical entry since the lexical entries of a given language do not differ in this respect.

(3) Mary {resided / glanced} {near / by / outside / \*of / \*with / \*for} the hall.

(4) a. Mary {\*resided / glanced} {down / {toward / into} a small apartment}.

b. Mary {resided / \*glanced} {within walking distance / at home}

The problematic examples like those above suggest that Chomsky's concept of subcategorization was inadequate. Bresnan (1970) first notes the inadequacies, initiating thereby what is referred to as a second phase of understanding the subcategorization mechanism.

The dominant aim of the second phase was the attempt to capture all the semantic subtleties that cause the divisions regarding the acceptability of some head-complement relations similar to that shown in (3) and (4) above. Consequently, a distinction emerged between c-selection (syntactically motivated subcategorization) on the one hand and s-selection (semantically motivated subcategorization) on the other hand. The distinction is based on the claim that s-selection is in fact better suited to capture all co-occurrence relations between a head X and a complement YP in terms of their "deeper semantic regularities".<sup>99</sup>

Grimshaw's (1979) study dealing with several head-complement co-occurrence patterns falls into this period, as well as Jackendoff's (1990) attempt to derive syntactic patterns from underlying semantic relations with the help of a finite set of basic semantic features, such as +\_\_THEME, +\_\_GOAL, +\_\_PATH, +\_\_LOCATION etc.

Grimshaw (1979) represents the first account of the clear difference between c-selection and s-selection. She argues that they are autonomous systems of grammar and advocates their separate feature formalizations. According to Grimshaw, a

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<sup>99</sup> Emonds (2000: 37).

predicate can s-select complements categorized as Q(question), P(proposition) or E (exclamation). Crucially, Q, P and E features are not in one-to-one correspondence with syntactic categories. Thus the predicate *ask* s-selects a complement that has the Q feature. However, whilst we would associate Q with CP on the level of c-selection, *ask* can c-select not only CP, but also NP(DP) or null complement, as in

- (5) a. John asked me [what the time was]. CP  
 b. John asked me [the time]. NP  
 c. Bill wanted to know what the time was, so I asked  $\emptyset$ .<sup>100</sup>

The s-selection of Q is associated with the c-selection of CP, NP and  $\emptyset$  in (5). The semantic category Q is realized in what Grimshaw calls *Canonical Structural Realization (CSR)*. In Grimshaw's system, CSR (Q) = CP, CSR (thing) = NP and CSR (action) = VP. Consequently, she proposes the following Context Principle:

(6) *Context Principle*

If a predicate s-selects a semantic category *C*, then it c-selects (subcategorizes) CSR(*C*).<sup>101</sup>

Grimshaw argues that s-selectional features are needed *in addition* to c-selectional features. This is because certain elements of the complement selection (such as those shown in (3) and (4) above) can only be explained in terms of the

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<sup>100</sup> Taken from Pesetsky (1991).

<sup>101</sup> Grimshaw (1979).

inherent semantic features (+GOAL, +PATH etc.) rather than features that are strictly syntactic.<sup>102</sup>

The third phase of dealing with the subcategorization issue starts in Baltin (1987) and is further represented by Emonds' (2000: 36-70) notion of Extended Classical Subcategorization (ECS). ECS modifies Chomsky's concept by the elimination of the phrasal status of the subcategorization features:

- (7) a. @, X, +\_\_YP (Chomsky)  
→  
b. @, X, +\_\_Y (Emonds)

In (7b), @ is a lexical item, and Y° is considered to be the head of a maximal projection which is a sister to X°. <sup>103</sup> Since @ represents a lexical entry, the important consequence of the new notation is the elimination of phrases in the lexicon. This corresponds fully to Emonds' description of the Lexicon and yields the following generalization:

(8) *The Lexical Interface Principle*

The lexicon uses only morpheme categories in its statements. It cannot mention phrases, nor distinguish between X and XP.

Emonds (2000: 42)

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<sup>102</sup> This claim in fact weakens the autonomous status of the c-selection. Pesetsky pursues this line of argumentation further by suggesting c-selection be abandoned entirely and replaced with l-selection (Pesetsky (1991: Ch1).

<sup>103</sup> Emonds (2000: 41-42), Brame (1984), Baltin (1987).

In the light of the Lexical Interface Principle, all lexical entries that select for their complements are free from not only any phrasal categories, but also theta-grids and further s-selection devices.<sup>104</sup>

The semantic concurrence relations are not discarded from the subcategorization framework of a lexical entry. Emonds suggests that both c-selection and s-selection features are cooperating within the framework. He proposes the intrinsic cognitive syntactic features  $F$  in place of the classical c-selection features and intrinsic semantic features  $f$  in place of s-selection features. With these two sets of features, he proceeds to the formalization

$$(9) \ @, X, F_i, f_i, +\_F_k,^{105}$$

where  $@$  is a lexical entry. Importantly, (9) stipulates that all necessary specific semantic features ( $f_n$ ) that are added to the frame to account for co-occurrence relations are always limited to the *inherent* features of  $@$  satisfying  $+\_F_k$ . In other words, (9) should not involve such notions as a  $\theta$ -role, which is not specified in the Lexicon. ECS then assures the well-formed subcategorization frame in the following way:

(10) Extended Classical Subcategorization.

$@, X, +\_Y$  is satisfied if and only if  $Y$  is a cognitive syntactic feature of a lexical head of a complement in  $XP$ .<sup>106</sup>

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<sup>104</sup> One of the motives for such limitation of a lexical entry is the relative ease of the language acquisition process. Within Emonds' framework, lexical items are the only learned aspect of natural language, and hence it is highly desirable to limit the inventory of devices that are attached to a lexical entry and as such learned during language acquisition.

<sup>105</sup> Emonds (2000: 42)

<sup>106</sup> Emonds (2000: 46)

I will adopt a modified ECS mechanism to show the specific subcategorization frame of Czech modal verbs in the Lexicon (section 5.3.). I will also analyze how this subcategorization frame contributes to the distinction of Czech modals from not just auxiliaries and fully lexical verbs, but also other possible semi-lexical candidates such as aspectual verbs (5.4.).

### 5.3. Subcategorization frame for Czech modal verbs

Emonds' distinction between the purely semantic feature  $f$  on one hand and the cognitive syntactic feature  $F$  on the other hand is the starting point of our hypothesis. The primary function of both features is to distinguish between lexical (open class) categories, having both  $f$  and  $F$ , and functional (closed class) categories lacking  $f$ . In Emonds' system, semi-lexical categories are determined by lacking  $f$  in the same way as functional categories – they are grammatical elements with no inherent semantic features.

The position of this thesis in respect of semi-lexicality is different. I argued in chapter 2 for the approach that does not treat semi-lexical items as another type of functional category embedded in the group of main lexical categories. In other words, I have proposed that Czech modal verbs have to be distinguished from auxiliaries by retaining remnants of the purely semantic feature  $f$ . This ensures that they are not the same grammatical items as auxiliaries. I will adhere to this proposition by modifying Emonds' subcategorization frame that is an adequate tool for capturing the infinitival complementation of Czech modals.

### 5.3.1. The hypothesis

If we treat the purely semantic feature  $f$  as a distinctive feature in strict accordance with Emonds' framework, it becomes obvious that it will not be sufficient for description of semi-lexicality. The discussion so far has led us to understand the role of  $f$  as a binary opposition between grammatical items and lexical items. This however does not efficiently answer the following questions:

- (11) a. Are semi-lexical items closed-class items?
- b. Consequently, do Czech modal verbs lack purely semantic features similarly to strictly functional items such as auxiliaries?

Both questions can be addressed by the reintroduction of the purely semantic feature  $f$  into the modal subcategorization frame. Czech modals show some closed class properties that signal their status as “grammatical verbs”.<sup>107</sup> At the same time, they have to retain the purely semantic feature to account for their lexical behaviour. Moreover, I assume that Czech modals have the inherent semantic features that enable them to quantify over the sets of possible worlds.<sup>108</sup>

It follows from what has been observed about Czech modals that they form a closed class subgroup within the group of Czech verbs, but, unlike auxiliaries, can have a purely semantic feature  $f$ . Let us assume that the partial lexical status of modal verbs is reflected in the restriction of the purely semantic feature  $f$ . This restriction is semantically motivated; whilst lexical verbs denote events, modals denote the

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<sup>107</sup> See chapter 3: 104-109.

<sup>108</sup> This is discussed in chapter 7.

relations between events.<sup>109</sup> If true, this assumption would mean that the modal lexical entries in Czech differ from other lexical entries by having a restricted semantic feature  $f$ . The modification of the purely semantic feature  $f$  in case of modal lexical entries looks as follows:

(12) If @ is a modal, then

$$@, X, F_i, f_i^{\wedge}, +\_F_k$$

In (12),  $f_i^{\wedge}$  is a purely semantic feature that captures the semi-lexical status of Czech modal verbs. It has an intermediate character between cognitive syntactic feature  $F_i$  (it does not specify the derivation of the modal syntactic structure) and the purely semantic feature  $f$  (it does specify the abstract modal relations at the level of LF).<sup>110</sup>

Furthermore, I propose that  $F_i$  is identical to Emonds' +/- MODAL<sup>111</sup>. In the case of Czech modal structures, +/- MODAL is a cognitive syntactic feature.  $f_i^{\wedge}$  is inherently responsible for the relations represented by modal semantics, such as scope properties and quantification over possible worlds. To account for this fact, and to distinguish  $f_i^{\wedge}$  feature from +/- MODAL, I will call it +/- *mod*. Let us consider Czech TMV *muset* 'must'. The modified subcategorization frame would look as follows:

$$(13) \text{ muset, V, + MODAL, + mod, +\_ [V, INF]}$$

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<sup>109</sup> We saw this in chapter 4. Unlike TMVs, OMVs were partially available for event denotation, but only as a part of more complex predicates.

<sup>110</sup> See chapter 9.

<sup>111</sup> Emonds (2000: 123, 296)



Note that + MODAL and + *mod* are not distinctive in terms of deriving (+ MODAL – *mod*), (- MODAL - *mod*) and (- MODAL + *mod*) variants. A modal entry has to have both + MODAL and + *mod*. Their role in the subcategorization frame is to refer to two different attributes of modal verbs, one motivated by syntax and the other by the inherent semantics of a modal.<sup>112</sup> The role of +\_\_ [V, INF] is then to specify the syntactic environment of Czech modal verbs, representing the fact that their complement selection is restricted to infinitives. The subcategorization frame of the modal *muset* reflects the fact that the modal has a non-finite V complement (example (14a) below) and distinguish it from a fully lexical verb that selects a complement of category N/D (example (14b)):

- (14) a. Jan musí spravit ty hodiny.  
           Jan must3Sg fixInf that clockAcc  
           ‘Jan must fix that clock.’
- b. Jan spravuje ty hodiny.  
           Jan fix3Sg that clockAcc  
           ‘Jan is fixing that clock.’

To conclude, I propose that (13) is the unifying formalization of the way Czech modal verbs select their complements. In other words, it stipulates that the lexical heads of complements of Czech modal verbs must have intrinsic cognitive syntactic features V and INF. This should assure the fact that both TMVs and OMVs in Czech select only other verbs in the infinitival form as their complements. Nevertheless, there seem to be a number of specific data that at first sight suggest the

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<sup>112</sup> This means that +*mod* includes, among others, such semantic attributes of Czech modal verbs as their ability to convey ‘necessity’, ‘probability’, ‘obligation’ etc. It is also responsible for the way modals and their combinations in a clausal structure relate to the sets of possible worlds, which will be discussed in chapter 7.

possibility of Czech modals selecting N complements in the same way as fully lexical verbs. These are discussed in the following section.

### 5.3.2. Non-infinitival complements of Czech modals?

The advantage of the subcategorization frame in (13) is that it clearly captures the syntactic behaviour of Czech modal verbs as distinct from that of fully lexical verbs. However, it has its counterexamples. There are several interesting cases in Czech that seem to present a problem for (13). Our task is to recognize them, identify both their differences and what they have in common, and consider to what extent they can be accommodated in our approach.

I have already hinted at the fact that certain types of modal structures in Czech look like simple V predicates rather than V+Vinf clusters. Accordingly, they appear to select D categories instead of verbs. This is more apparent in the OMV group, but is also relevant for TMVs. The following data include one of the example types:

- (15) a. Jan může hamburger. TMV  
 Jan can3SgPres hamburgerAcc  
 ‘Jan can (eat) hamburger.’/ ‘John likes hamburger(s).’  
 b. Všichni studenti chtějí dobré známky OMV  
 All students want3PlPres good gradesAcc  
 ‘All students want good grades.’

Evidently, both data involving the TMV *moci* ‘can’ in (15a) and the OMV *chtít* ‘want’ in (15b) seem to contain grammatical structures where both modals select accusative DPs ([*hamburger*], [*dobré známky*]) as their complements. Hence, the

possibility of (15) appears to contradict what has been assumed about Czech modal verbs in respect of their unique subcategorization frame.

The argument against the generalization in (13) could be further enhanced by the fact that the apparent DP complement of a modal in (15) can take on the form of a personal pronoun, as in *Jan ho může* ‘Jan likes it’, as well as the general demonstrative pronoun *to* ‘it’, as in *Jan to může* ‘Jan can that’, or its word order variant emphasizing that it is the hamburger Jan likes, as in *To (hamburger) Jan může* ‘**That** Jan can’. Similarly, the same can be done in the case of (15b) with a minor word order adjustment: *Všichni studenti je chtějí* ‘All students want them’ and *Všichni studenti to chtějí* ‘All students want it’. Due to the more ‘lexically based’ character of OMVs, the example with *chtít* ‘want’ seems to behave more productively in respect of the demonstrative *to*.

The fact that the DP complement of modals can be substituted by a generic and personal pronoun seems to suggest a degree of idiosyncrasy in the examples (15). The full DP complement of a modal is sometimes difficult, if not entirely impossible, to reconstruct from the structures containing *to* demonstratives. Consider (16) below:

- (16) To    můžu!  
       that can1SgPres  
       ‘That I can!’

The contextual variants of using the sentence in (16) above are numerous and we are not going to study and analyze all of them thoroughly here. It is important to note that (16) can relate both to the preceding and the following text, as well as the extra textual context (“real life” situation).<sup>113</sup> Leaving specific pragmalinguistic

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<sup>113</sup> For example, it can be accompanied by non-verbal communication.

aspects aside, a native Czech speaker clearly perceives that (16) is grammatical and conveys the range of complicated contextual relations.<sup>114</sup>

Since it is undesirable to produce a situation where we have to add additional secondary syntactic features to the subcategorization frame of Czech modal verbs, the structures such as the one portrayed by (15) above have to be treated as syntactic anomalies. The question is now how these anomalies can be explained. There are several options regarding how this can be achieved. Let us critically review the solution most common in the literature before offering our own: the assumption that (15) involves non-modal, separate lexical entries, some of them having idiomatic characters.

### 5.3.3. Against the existence of a silent verb complement of a modal

The most structurally elegant solution appears to be a version of the silent verbs hypothesis. It assumes that whenever there is a DP complement of a modal, we in fact deal with the silent verb type structure.

Thus for Dutch, Wyngaerd (1994: 65-68) proposes that if a modal selects a non-verbal complement, a silent infinitive is present, and the structure with the silent infinitival complement can in fact be derived from that with the visible infinitival complement. For instance, as the following two examples show, (17a) is assumed to be derived from (17b) by the advocates of the silent verb hypothesis:

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<sup>114</sup> Some of them, especially those that are not evidently related to the previous context, are highly idiomatic. The use of *To můžu!* 'That I can/like' without any previous context in the substandard Czech is one example. Similarly, another example can be the idiomatic use of *Všichni studenti to chtějí* 'All students want it' where demonstrative *to* refers to sex.

(17) a. Jan moet een boek.  
 Jan must a book  
 ‘Jan wants to have a book.’

b. Jan moet een boek *hebben*.  
 John must a book have  
 ‘Jan wants to have a book.’<sup>115</sup>

The advocates of the silent verb hypothesis in general argue for the ‘phonetically null lexical verbs’, or ‘empty verbs’, to occupy the position of modal complements.<sup>116</sup> To use a language more closely related to Czech, Marušič & Žaucer (2004) find several examples of empty verbs appearing in Slovenian modal structures. Whilst they do not work with the concept of semi-lexicality, some of the examples they show demonstrate the identical problem we have here and offer a solution deriving from the silent verb theory.

Marušič & Žaucer see three instances of what they call ‘phonetically null lexical verbs’ in Slovenian modal structures, ‘feel-like’, ‘go’ and ‘have’ including ‘get’ that is transcribed as ‘come to have’. Whilst ‘feel-like’ is not relevant for our hypothesis, ‘go’ and ‘have’ show identical behaviour in both Slovenian and Czech:

(18) a. Peter hoče več igrač kot Meta (Slovenian)  
 Peter wants more toys than Meta  
 ‘Peter wants to have more toys than Meta does.’  
 or ‘Peter wants to get more toys than Meta will get.’<sup>117</sup>

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<sup>115</sup> See Wyngaerd (1994).

<sup>116</sup> The idea of empty verbs in English has been presented, for instance, by Larson et al. (1997).

<sup>117</sup> See Marušič & Žaucer (2004).

- b. Petr chce víc hraček než Meta (Czech)  
 Petr wants more toys than Meta  
 ‘Peter wants to have more toys than Meta does.’  
 ‘Peter wants to get more toys than Meta will get.’

- (19) a. Vsak Slovenec mora vsaj enkrat na Triglav (Slovenian)  
 every Slovenian must at-least once onto Mt.-Triglav  
 ‘Every Slovenian must go up Mt. Triglav at least once.’  
 b. Každý Čech musí aspoň jednou na Sněžku (Czech)  
 every Czech must at-least once onto Mt.- Sněžka  
 ‘Every Czech must go up Mt. Sněžka at least once’

The motion verb ‘go’ is probably the easiest to recognize as a phonetically null candidate, given its status across languages. This is probably to be accounted for by its idiomatic properties, as well as the type of syntactic context in which it appears.

The possibility of a silent motion verb ‘go’ in modal structures was first discussed in Hoekstra (1997), who noticed that Swiss German, being an OV language, still allows structures like (20):

- (20) ...wil mer hetted söle häi  
 ...because we would've had-to home  
 ‘...because we should've gone home’

The directional PP follows the modal verb cluster at the end of the clause in (20). This is unusual, since directional PPs can never occur in that position in Germanic languages. Hoekstra proposes that the problem can be solved when we assume that the PP is not directly dependent on the modal, but there is an invisible

motion verb *gaa* between them. This solution is elegant, but it also raises the question of how we can explain why the motion verb is invisible.

Hoekstra's study was followed up by Henk van Riemsdijk (2002), who states that there are basically two theories that might explain the invisibility of *gaa*: the first one argues for the deletion of *gaa* at PF. The PF-deletion theory was proposed in Wyngaerd (1994) and subsequently heavily criticized by Barbiers (1995). Van Riemsdijk agrees that the PF-deletion theory has to be abandoned in light of the criticism and proposes instead the 'lexical theory', claiming that there is an empty motion verb GAA (~GO) in the Lexicon (van Riemsdijk 2002: 151). He proposes that silent GAA in Swiss German has the following lexical entry:

(21) GAA =	phonetic form:	[Ø]
	categorical status:	[+V, -N]
	semantic content:	[+DIR]
	licensing condition:	requires M

(van Riemsdijk 2002: 152)

We can find similar structures in Czech, mostly expressing deontic modality<sup>118</sup>:

(22) a. Jan musí domů.

Jan must3Sg home

'Jan must go home.'

b. Jan může do kina.

Jan can3Sg to cinema

'Jan can (is allowed to) go to the cinema.'

<sup>118</sup> The apparently silent 'go' interpretation is not possible in epistemic modal structures, as a certain degree of proximity between the licensor and the licensee is required in order for licensing to be possible and the epistemic verbs scope over larger domains than root verbs. (Riemsdijk 2002: 38-39).

It is not difficult to observe that whenever researchers come up with examples supporting the silent verb theory, they always use a modal as their ‘main verb’. In other words, it seems that the phonetically null complements can be traced only when a modal is involved. Interestingly, one of the questions Marušič & Žaucer (2004) ask is why only modals, and not other functional verbs, can license a phonetically empty complement.

To maintain derivational coherence and uniformity, advocates of the phonetically null verbal complements have to deal with the notion of licensing and the recovery of such complements in the structure. These notions are interrelated.

Van Riemsdijk suggests that empty verbs need a licensor that makes them structurally visible. In other words, it assures that they are recoverable in the structure. The modal verb functions as such a licensor (van Riemsdijk 2002: 183):

(23) [ e ] +V, +DIR must be licensed by M

According to van Riemsdijk, the syntactic character of the empty motion verb licensed by the modal differs across Germanic languages. Whilst Dutch is said to license an empty verb ([GAAN]<sup>o</sup>), Swiss German licenses a projection of an empty verb ([GAA]P(hrase)). This explains the structural differences between both languages in respect of invisible motion verbs (van Riemsdijk 2002: 183).

Marušič & Žaucer (2004) are aware that licensors do not always appear together with the empty verbs. It seems that the function of licensing empty verbs has to be treated as only potentially attributable to modals.

In Czech, modal verbs have V complements in the majority of cases. It is when we encounter the examples like (22) above that van Riemsdijk’s observations



become relevant. The question is, do we need to propose an additional verbal projection that is phonetically invisible but structurally recoverable as a complement of the modal to explain the example in (22)? Or is there another, more parsimonious solution?

In theory, we could assume that the modal *muŝet* in the sentence *Jan muŝi domu* ‘Jan must home’ indeed functions as a licenser for an empty infinitival verb. If that was the case, the licensee would have to have the character of a VP projection, similar to what Riemsdijk proposes for Swiss German. However, there are two theoretical reasons and one empirical reason to be reluctant to adopt this position.

The first theoretical reason is inspired by the rule about keeping the syntactic structure as simple as possible.<sup>119</sup> I assume that every expansion of the syntactic structure has to be strongly motivated and every reduction of the syntactic structure is desirable. If we are going to expand the modal structure by phrasal projections that are phonetically invisible, we need to have a good reason to do so. It is possible that Germanic languages can provide that reason. However, Czech data are not strong enough to substantiate Riemsdijk’s conclusion. We have seen that the empty GAA licensing in Swiss German, an OV language, is enforced by the unusual position of directional PPs at the end of the sentence. Therefore, the non-existence of an empty category forces grammaticality issues. In Czech, the potential grammaticality issues cannot be forced by the PP and thus are more dependent on the modal itself.

Not all semi-lexical verbs in Czech can license phonetically null or silent verbs. For instance, we do not find aspectual verbs licensing silent verbs because their lexical entry allows them to select non-infinitival complements.<sup>120</sup> Hence the

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<sup>119</sup> This has been theoretically formulated at the start of the Minimalist Program; see Chomsky (1995).

<sup>120</sup> This will be discussed in the following section 5.4.

uniqueness of silent verb licensing, attributed to modals, cannot be explained by their semi-lexical status.

The second theoretical reason is also related to the process of licensing. The theory suggests that licensing should have a uniform structure for all null verbs. Marušič & Žaucer (2004) realize that this is not the case as they suggest different types of licensing for all three phonetically null verbs they mention. According to them, ‘have’ is recoverable due to a DP complement and not a modal, and whilst licensing of ‘go’ corresponds with Riemsdijk’s emphasis on the adjacent functional head, there is no need for a functional verb in the licensing of ‘feel-like’.<sup>121</sup> Understandably, the authors conclude that the unifying structural licensing of phonetically null verbs does not exist. The question is, supposing there are numerous cases of empty verbs, do we have to build a separate licensing theory for every one of them?

The empirical reason deals with the problems of finding out what exactly the empty verb is. For instance, Czech modal structures seemingly enable the full range of potential licensing of silent lexical verbs. Moreover, after scrutinizing a number of potentially silent verb complements of Czech modals, we can easily recognize the vague status they acquire as a result of highly arbitrary and extralinguistic decisions. Let me first illustrate the issue by repeating some relevant data used so far as (24) below:

- (24) a. Jan    musí    (**jít** GO)    domů.  
         Jan    must3Sg                home  
         ‘Jan has to go home.’

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<sup>121</sup> Marušič & Žaucer (2004: 12-13).

b. Všichni studenti chtějí { mít HAVE  
dostávat GET  
?docílit ACHIEVE } dobré známky.  
All students want3Pl good gradesAcc  
'All students want good grades.'

c. Jan může { ?mít HAVE  
?jíst? EAT } hamburger.  
Jan can3Sg hamburgerAcc  
'Jan can (eat) hamburgers.' / 'Jan likes hamburgers.'

In (24), I follow van Riemsdijk and others and assume that the modal has a silent verb complement. The descending order of the data in (24) is not coincidental. It aims to suggest the increasing difficulty we are faced with when trying to establish what is in fact the silent verb contained within these structures.

The datum in (24a) involves the most favourable example of a silent verb licensing – the highlighted verb *jít* 'go', functioning as a complement of the modal, which plays the central role in van Riemsdijk's argument.

However, this is not the case in (24b), where we have three candidates for the silent verb complement of the modal. My argument against the existence of phonetically null but syntactically present verbs is that under no circumstances can we demonstrate satisfactorily that one of these three candidates is our silent verb. Neither can we fully establish the order of preference between them, nor can we list them exhaustively. It seems that all these tasks are subject to pragmatic intuition, which will in this case not shed any light on the problem.

Naturally, this means that the process of silent verb licensing in (24b) is weak enough to be practically non-traceable in the structure. The only item that we can

vaguely characterize as a licenser here is the modal itself, due to its requirement to select infinitives. Hence the unified syntactic form of our silent verb candidates: regardless of their semantic features, all imaginable phonetically null complements of Czech *chtít* ‘want’ are verbs in the infinitive.<sup>122</sup>

There is a capacity recognizable in all theories arguing for silent verb complementation: the attribute of being phonetically null is linked to the attribute of being lexically limited. This can be seen in van Riemsdijk (2002), who chose light ‘go’ for his silent verb candidate. Similarly, HAVE, which has been traditionally defined as light in English and used as a null verb for Slovenian by Marušič & Žaucer (2004), has the attribute of being lexically limited. However, I argue that there is absolutely no guarantee that phonetically null verbs must be semi-lexical verbs, as is demonstrated by (24c) above.

In (24c), the primary verb to fill the ‘silent’ frame would be non-modal ‘have’ (*mít*). However, if forced to search for the missing silent verb complement, all Czech native speakers will intuitively discard verb *mít* ‘have’ in favour of an open class verb containing full semantic information, which can be *jíst* ‘eat’ or any other lexical verb. This is surprising, and creates further problems for the validity of the silent verb theory.

#### 5.3.4. Explanation using ‘double lexical entries’

As I have already suggested, closer investigation of data in (24) favours the redefining of our understanding of the modal *moci* ‘can’ when it appears in structures

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<sup>122</sup> This will be shown as false licensing when I argue that the “modals” in (22) are not in fact modals at all. Rather, they are phonetically identical but separate lexical entries, different from those having the modal subcategorization frame.

such as (24c). Consequently, I will assume that the interpretation of Jan *může hamburger* is ‘Jan likes hamburgers’ rather than ‘Jan can Ø hamburgers.’<sup>123</sup>

Nonetheless, this interpretation appears to require that there are two lexical entries for each modal or at least some modals. Barbiers (1995), who is himself highly critical of the silent verb theory in his argument that Dutch modals can combine with particles, rejects this position, claiming simply that modals in Dutch can take non-verbal complements and directly select DPs.<sup>124</sup> The reason for rejection of double lexical entries in Barbiers’ case is the identical interpretation of two structures represented in (25) below:

(25) a. Jan mag graag een uur per dag hardlopen.

Jan may gladly an hour a day run

‘Jan likes to run one hour a day.’

b. Jan mag Marie graag.

Jan likes Mary gladly

‘Jan likes Mary.’

(Barbiers 1995: 156)

Barbiers argues that we are dealing with the same lexical item *mogen* in (25). This argument can be used easily for Dutch *mogen* (which we would call ‘polysemous’) due to the fact that both meanings (modal and non-modal) represented by a phonetically identical lexical entry, can be characterized as LIKE.

<sup>123</sup> Other TMVs can enter similar structures. For instance,

(i) Jan *nemusi* Westlife.  
Jan NEGmust3SgPres WestlifeAcc

has the interpretation ‘Jan does not like Westlife’, rather than ‘Jan must not Ø Westlife’.

<sup>124</sup> Barbiers (1995: 156)

However, the argument based on (25) cannot account for Czech TMVs *muset* ‘must’ and *moci* ‘can’ that can appear in the structures motivating the LIKE interpretation. This is indicated by the fact that both modal and non-modal meanings are substantially different in these structures, and there is another lexical entry, *mít rád* ‘like’, which expresses LIKE primarily. Let us demonstrate the case with a TMV *moci* ‘can’ and its ability to attain the LIKE reading (the relevant semantic interpretation is in capitals) :

(26) a. Jan může studovat lingvistiku. CAN / IS ALLOWED

Jan can3Sg studyInf linguisticsAcc

‘Jan can study linguistics.’

b. Jan může hamburger. LIKE

Jan can3Sg hamburgerAcc

‘Jan likes hamburgers.’

c. Jan má rád hamburger. LIKE

Jan like3Sg hamburgerAcc

‘Jan likes hamburgers.’

The data in (26a-b) demonstrates both modal and non-modal reading of Czech *moci* ‘can’, whilst (26c) shows that there is another, phonetically different lexical entry that obligatorily expresses the LIKE meaning.

The difficulty for Barbiers’ proposal of lexical uniformity derives from the reversed behaviour of the data involving additional interpretation of Czech *moci* ‘can’. In the case of Dutch, *mogen* always yields a LIKE interpretation, which leads Barbiers to suggest that we are in fact dealing with a single lexical entry, rather than two different, phonetically identical lexical entries. In other words, judging by

Barbiers' argumentation, there is no potential modal verb in Dutch that would involve a clearly distinguishable non-modal interpretation.

The LIKE reading in Czech is, on the contrary, strictly non-modal. This is supported by the existence of the fully lexical *mít rád* 'like' that expresses LIKE primarily (26c). This strongly motivates the existence of two lexical entries for *moci* 'can' / *muset* 'must' which are phonetically identical but separable in the Lexicon. With the help of this assumption, we can explain two basically different subcategorization frames that both *moci* and *muset* enter, and claim that only one of them in fact involves a modal verb.

Before concluding that the assumption of double lexical entries for Czech modals can satisfactorily explain the existence of DP complementation, it is important to note one more relevant difference between Czech TMVs and OMVs. I have shown that Czech TMVs *moci* 'can' and *muset* 'must' are potentially involved in non-modal LIKE interpretations. The questions that have to be asked here are to what extent we can observe the same phenomenon in other TMVs, with what degree of productivity and whether the whole behaviour is not to be treated as idiomatic.

Of all four members of the TMV group (*muset* 'must', *moci* 'can', *mít* 'have to' and *smět* 'be allowed to') only *muset* and *moci* attain the LIKE interpretation. Nevertheless, it is quite significant for our approach that *mít*, on the other hand, distinguishes clearly between non-modal POSSESS and modal HAVE TO in the Czech Lexicon, and that this distinction is not reflected in the phonetic realization of both lexical entries, but in their different subcategorization frames. Hence I propose the following data interpretation:

(27) a. mít, V, +MODAL, +*mod*, +\_\_ [V, INF]

Jan měl číst tu knihu. HAVE TO / \*POSSESS

Jan had3Sg readInf that bookAcc

‘Jan had to read that book.’

b. mít, V, +POSSESSIVE, *f*, +\_\_ [D]

Jan měl tu knihu. \*HAVE TO / POSSESS

Jan had3Sg that bookAcc

‘Jan had that book.’

The only possible interpretation of *mít* ‘have’ in (27a) is that it is a modal verb. On the other hand, a modal interpretation of (27b) is, crucially, not possible. The modal *mít* has a cognitive syntactic feature +MODAL and inherent semantic feature +*mod*, whereas the lexical *mít* has a cognitive syntactic feature +POSSESSIVE and inherent semantic feature *f* that determines its place in the lexicon as a lexical item.

In general, both TMVs and OMVs strongly support the argument in favour of double lexical entry.<sup>125</sup> Nevertheless, some TMVs such as *muset* ‘must’ and *moci*

<sup>125</sup> TMV *smět* ‘be allowed’ is the only case that seems to complicate our assumption, as it can directly select DP complements without any traceable change of modal interpretation:

- (i) Jan smí pít jedno pivo denně. MODAL  
 Jan can3Sg drinkInf one beerAcc per day  
 ‘Jan is allowed to drink one beer per day.’
- (ii) Jan smí jedno pivo denně. ? NON- MODAL?  
 Jan can3Sg one beerAcc per day  
 ‘Jan is allowed one beer per day.’

I assume that the explanation of the data above has to take into account that Czech *smět* ‘be allowed’ is the only TMV that cannot have epistemic interpretation (see chapters 7, 8 and 9). As such, it is primarily responsible for the modal meaning of PERMISSION, whilst not being easily open to non-modal interpretation.

Other TMVs can potentially convey the same meaning, so we have to add that the problem relates as well to the specific status of permissive modality:

- (i) Jan může hamburger každý den. LIKE / IS ALLOWED TO  
 Jan can3Sg hamburgerAcc every day  
 ‘Jan likes a hamburger every day.’ / ‘Jan is allowed hamburger every day.’

BUT



‘can’ behave idiosyncratically when it comes to attaining a non-modal interpretation, which is due to the observed fact that TMVs are more lexically limited than OMVs. A relevant degree of idiosyncrasy in sentences such as *Jan musí hamburger každý den* ‘Jan likes a hamburger every day’ suggests an effective solution, to develop formalization similar to Emonds’ subcategorization frame for idioms in the Lexicon. Thus for English *kick the bucket*, Emonds suggests

(28) kick, V, F<sub>i</sub>, semantic f<sub>i</sub> for *die*, +\_\_[N, bucket, DEF]<sup>126</sup>

If we provide a similar lexical entry for non-modal interpretations of *muset* ‘must’ and *moci* ‘can’, we get the following formalization:

(29) *muset* / *moci*, V, F<sub>i</sub>, semantic f<sub>i</sub> for *like*, +\_\_[D]

The formalization in (29) suggests the subcategorization frame for the occurrences of Czech *muset* and *moci* in those environments where they lose their modal status (F<sub>i</sub> ≠ +MODAL). I propose (29) as a representation of the ‘idiosyncratic’ lexical entries of both TMVs and argue that they satisfactorily explain the sentences such as *Jan nemusí Westlife* ‘Jan does not like Westlife’ encountered previously.

The actual need for a different subcategorization frame is driven by the evidence we gathered before, which strongly favours a solution in terms of double lexical entries. As long as we accept that most Czech modal verbs involve non-modal parallel entries in the Lexicon, we have to both assess the individual subcategorization

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- (ii) Jan musí hamburger každý den. LIKE / \*IS REQUIRED TO  
 Jan must3Sg hamburgerAcc every day  
 ‘Jan likes a hamburger every day.’

<sup>126</sup> Emonds (2000: 43)

frames of such entries and investigate the extent of their possible generalization. (29) attempts to deal with both tasks simply assuming the non-modal semantic feature involving the meaning of *like*, whose role is to replace *+mod* discussed throughout this chapter.

Unfortunately, the character of such a generalization will inevitably remain speculative because the use of the subcategorization frames identified by (29) is in some cases (such as *muset* ‘must’ and *moci* ‘can’) idiomatically marked.

However, we are still not speaking of idioms in Emonds’ sense here (*kick the bucket* is a good example). The interpretation of those cases involving (29) along the lines of Emonds’ treatment of idioms is not without its complexities. In the subcategorization frame suggested by (29), the D complement remains lexically unspecified unlike in Emonds’ example, where *kick* always selects *bucket* to get the meaning of ‘die’. In this sense, the LIKE structures found in Czech *muset* ‘must’ and *moci* ‘can’, although prone to be treated as idiosyncrasies due to their idiomatic status, show important similarities in the subcategorization frame to other phonetically identical verbs in the Czech Lexicon that unquestionably involves pairs of modal v. non-modal lexical entries. Czech *mít* with both non-modal (HAVE) and modal (HAVE TO) interpretation is a prime example, as we have observed in (29) above.

Regardless of the difficulties arising from attempts to formally treat *muset* ‘must’ and *moci* ‘can’ in LIKE structures as a special case of idiomatic lexical entries, the analysis of *mít* ‘have/have to’ in (29) proves that not all non-modal lexical entries of Czech TMVs can be resolved as idioms anyway. Nonetheless, even the idiomatic interpretation above does not discount the use of a separate lexical entry for D subcategorization frames. It only suggests that the use of such an entry is limited, but not as limited as the structure of typical idioms would suggest.

Whilst Czech TMVs offer some evidence in favour of the double lexical entry hypothesis, the evidence in OMVs becomes overwhelming. All Czech OMVs are of necessity responsible for two sets of interpretation, and the distinction between modal and non-modal interpretation is in this case a highly productive phenomenon.

The verb *chtít* ‘want’ has, for instance, both modal and non-modal interpretation, as is demonstrated in (30) below:

(30) a. MODAL

Jan chce číst tu knihu o lingvistice \*(k narozeninám).  
 Jan want3Sg readInf that bookAcc about linguistics (for birthday)  
 ‘Jan wants to read that book about linguistics for his birthday.’

b. NON-MODAL

Jan chce tu knihu o lingvistice (k narozeninám).  
 Jan want3Sg that bookAcc about linguistics (for birthday)  
 ‘Jan wants that book about linguistics for his birthday.’

The data in (30) do not just distinguish clearly the modal *chtít* ‘want’ from the non-modal *chtít* ‘want’ in Czech syntax, but also offer a significant way of testing the distinction by means of additional syntactic material in the form of an adverbial phrase *k narozeninám* ‘for birthday’. The test shows that the modal use of *chtít* is sensitive to particular syntactic environments typical for the non-modal *chtít*. The addition of *k narozeninám* ‘for birthday’, whilst permitted in (30b), renders (30a) ungrammatical. The reason for it is that the adverbial phrase *k narozeninám* modifies directly the simple verb *chtít* ‘want’ and not the object *tu knihu o lingvistice* ‘that book about linguistics’ in (30a), but cannot do the same in (30b) since *chtít* is a member of the complex verbal structure (CVD). Such tests are important because they

show that dual interpretation of Czech *chtít* ‘want’ specifies the syntactic environment in which it can appear.

I will conclude that the choice of different subcategorization frames in case of a modal and non-modal lexical entry for *chtít* ‘want’ has an impact on the syntactic environments in which both can occur.

#### 5.4. Unique character of the modal subcategorization frame

Now that we have identified verbs in Czech that, although they appear to be modals phonetically, are actually syntactically non-modals, the benefit of the modified subcategorization frame is palpable. Importantly, its application sets modal verbs aside from other semi-lexical candidates that may be members of the large CVD. One of those verb groups that fit this description is the group of aspectual verbs. I propose the following distinction:

- (31) a. modal verb, +MODAL, +*mod*, +\_\_ [V, INF]  
b. aspectual verb, +ASPECT, +*asp*, +\_\_ [V, INF]  
+\_\_ [P]  
(+\_\_ [D])

(31) suggests that there are several different types of complements that Czech aspectual verbs can select, which sets them apart from the modal verb group. Take for instance the aspectual *začít* ‘begin’. The example of the relevant complement variation is given in (32):

- (32) a. Jan začal číst tu knihu.  
 Jan begin3SgPast readInf that bookAcc  
 ‘Jan began reading (V) that book.’ +\_\_ [V, INF]
- b. Jan začal se čtením té knihy.  
 Jan begin3SgPast with readInstr thatGen bookGe  
 ‘Jan began with the reading (N) of that book.’ +\_\_ [P]
- c. Jan zrovna začal čtení té knihy.  
 Jan just begin3SgPast readAcc thatGen bookGen  
 ‘Jan began the reading (N) of that book.’ +\_\_ [D]

The data in (32) show that *začít* ‘begin’ can behave both like a semi-lexical and fully lexical verb. The example (32a) involves the “default” semi-lexical reading of *začít*, subcategorizing the infinitive and making it a member of the CVD. The other two examples show, on the other hand, that *začít* can select a prepositional phrase [*se čtením té knihy*] in the case of (32b), or even a DP [*čtení té knihy*] complement in the case of (32c).

In both cases, *začít* loses its semi-lexical status since it is not a member of a CVD and selects non-verbal complements. However, there is not the same motivation that we found in Czech modal structures for assuming the existence of three different lexical entries for *začít* in (32a-c). One of the reasons for this is that the aspectual verbs in Czech do not show the same degree of ambiguity as the modal verbs did. I suppose that rather than being lexically polysemic, aspectual verbs utilize the complex subcategorization frame to appear in the various syntactic environments shown in (32).

This assumption is supported by the optional status of the +\_\_ [D] complement suggested in (31) above. It appears that Czech aspectual verbs tend to

choose DP complements irregularly. Some of the members of the aspectual verb group take a DP complement more readily than others. Thus the verb *přestat* ‘stop’ seems to resist a DP complement in (33c) below, whilst accepting a PP complement in (33b):

- (33) a. Jan přestal kouřit dýmku.  
 Jan stop3SgPast smokeInf pipeAcc  
 ‘Jan stopped smoking (V) a pipe.’ +\_\_ [V, INF]
- b. Jan přestal s kouřením dýmky.  
 Jan stop3SgPast with smokeInstr pipeGen  
 ‘Jan stopped with smoking (N) a pipe’. +\_\_ [P]
- c. ??Jan přestal kouření dýmky.  
 Jan stop3SgPast smokeAcc pipeGen  
 ‘Jan stopped smoking (N) a pipe.’ +\_\_ [D]

The irregular D complementation captured above does not pose a problem for our subcategorization dichotomy between Czech modal verbs and aspectual verbs. If anything, the fact that some aspectual verbs cannot appear in the same syntactic environments as other aspectual verbs suggests that all selectional properties of aspectual verbs can be included in a single lexical entry. This is what distinguishes aspectual verbs from modals in terms of the subcategorization frame.

## 5.5. Summary and conclusions

Essentially, Czech modal structures always contain infinitives, and in many cases multiple occurrences of infinitives. The unified definition of modality and Czech modals has to account for the specific infinitival character of modal complements in Czech. The subcategorization hypothesis adopted from Emonds offers the syntactic solution.

In this chapter, I have adopted Emonds' Extended Classical Subcategorization (ECS) as a basis for the subcategorization frame of Czech modal verbs, which distinguishes them from fully lexical verbs on one hand and other semi-lexical candidates (aspectual verbs) on the other hand. I have shown that after a period in generative syntax that considered subcategorization to be semantically motivated, the introduction of ECS draws on the original syntactic principle (Chomsky 1965). However, ECS involves an important change of Chomsky's subcategorization frame by applying the Lexical Interface Principle, which substantially reduces the amount of syntactic (derivational) information contained in a lexical entry. This principle requires that the information includes category features of a complement (X), but cannot mention phrases (XP). For instance, lexical entry of a verb can only determine if it selects a noun (N) or another verb (V) and not NP or VP. We have seen that the addition of the Lexical Interface Principle has helped to solve many problems that the advocates of semantically oriented subcategorization pointed out.

Nevertheless, ECS had to be further modified to account for the semi-lexical status of Czech modal verbs based on our definition of semi-lexicality in chapter 2. I have made a claim that Czech modals retain a semantic feature (+*mod*) next to the cognitive syntactic feature (+MODAL). Both features are complementary: whilst the

latter co-specify the syntactic status of a modal verb together with +\_\_ (V, INF), the former captures the inherent semantic properties of modal verbs that can be roughly characterized as ‘modal meaning’.<sup>127</sup> The modification of ECS produced the unified subcategorization frame of Czech modal verbs, capturing their obligatory infinitival complementation. The apparent counterexamples were explained by the existence of two types of the subcategorization frame, of which only one has a modal character:

(34) a. mít, V, +MODAL, +*mod*, +\_\_ [V, INF]

Jan měl číst tu knihu. HAVE TO / \*POSSESS

Jan had3Sg readInf that bookAcc

‘Jan had to read that book.’

b. mít, V, +POSSESSIVE, *f*, +\_\_ [D]

Jan měl tu knihu. \*HAVE TO / POSSESS

Jan had3Sg that bookAcc

‘Jan had that book.’

There is a certain difficulty in calling (34a) and (34b) different entries in the Lexicon. It has been recently pointed out<sup>128</sup> that the term ‘double lexical entry’ is here to some extent misleading, since the modal *mít* ‘have’ and the non-modal *mít* ‘have’ in (34) are both Vs and share the phonetics and probably also the +STATIVITY feature. Therefore, a better solution for (34) seems to be to include both in the singular, basic V entry of the following character:

(35) mít, V, +STATIVE,  $\left\{ \begin{array}{l} \alpha (= +MODAL, +mod, +__ [V, INF]) \\ \beta (= +POSSESSIVE, f, +__ [D]) \end{array} \right\}$

<sup>127</sup> Chapter 7 further deals with the semantics of Czech modals and explains what can be conveyed by +*mod*.

<sup>128</sup> Emonds (personal communication).



The notation in (35) appears viable, and it has the ability to capture the shared phonetics of both ‘versions’ of *mít*. Moreover, it also reduces additional entries from the Lexicon, and therefore elegantly removes the problem of parsimony.<sup>129</sup> Nevertheless, there is also a significant disadvantage in having (35) in the lexicon. Firstly, the inclusion of both (+MODAL, +*mod*, +\_\_ [V, INF]) and (+POSSESSIVE, *f*, +\_\_ [D]) into a single lexical entry is not the same as the inclusion of (+ASPECT, +*asp*, +\_\_ [V, INF]), (+ASPECT, +*asp*, +\_\_ [PP]) and (ASPECT, +*asp*, +\_\_ [DP]) into a single lexical entry in the case of aspectual verbs. This is due to the fact that Czech aspectual verbs do not have counterparts with the same phonetics but lacking the cognitive syntactic F feature +ASPECT and the semi-lexical semantic *f*^ feature +*asp*. It follows that placing the difference in subcategorization frames of *mít* ‘have’ into a single, large lexical entry in the same way as we have done in the case of aspectual *začít* ‘begin’ would disable the explanation of why the former is ambiguous in terms of which set of features is considered in its derivation, and the latter is not.<sup>130</sup>

Secondly, the notation in (35) creates different levels of representation in a lexical entry, which, at this moment, complicates our analysis. The danger with this approach is that it can intuitively suggest a similar solution to other phonetically identical Vs with completely different subcategorization frames. The theoretical question is: what amount of information can be encoded in a single lexical entry before we have to speak about lexical polysemy?

Most of the feature characteristics of the two instances of *mít* ‘have’ are fundamentally different. This fact distinguishes Czech modals from aspectual verbs that can select several types of complements whilst retaining their +ASPECT /+*asp* feature, as we have seen in (32) and (33).

<sup>129</sup> I am aware that the dichotomy between a modal and a non-modal ‘entry’ of *mít* ‘have’ in the Lexicon creates the problem of parsimony regarding learnability issues.

<sup>130</sup> The difference is captured throughout the examples (30)–(34) above.

## Chapter 6

### *Derivation of Czech modal structures in syntax*

## 6.1. Introduction: modal verb – V category or auxiliary?

The main challenge that generative syntax has always faced when dealing with the issue of modality is, obviously, related to the categorial status of modal verbs in the syntactic structure. Whilst categories such as V and N have been cross-linguistically established since Chomsky (1957), there has been a long ongoing discussion about the function of modal verbs within the syntactic structures. This is partly due to the fact that unlike the undisputed members of the V category, modals show much wider variation across different languages regarding their derivational properties.

There are two primary options available when we discuss the status of modal verbs within the syntactic structure. The first option is to treat them as other members of V, the second is to claim that they are different from lexical Vs. The latter option has led to identifying English modal verbs either as auxiliaries (Palmer 1986), or as members of a specific subcategory of auxiliaries (Chomsky 1957). Chomsky assumed M for English modal verbs and C for past and aspectual indicators, suggesting the phrase structure rules *Aux* → *C(M)* (*have+en*) (*be+ing*), and *M* → *will, can, may, shall, must* (Chomsky (1957: p.39, 111). Significantly, Chomsky's phrase structure clearly shows that English modal verbs are treated at the same functional level as, for instance, tense morphemes, which is highly suggestive given the ability of modals like *will* and *shall* to express temporal relations.

However, the study of languages other than English, with the help of the constantly developing framework of generative syntax, led to a substantial redefinition of the 'auxiliary argument'. Languages like French and German show that auxiliary verbs can actually be much closer to the V category, contradicting the view

that the auxiliary status of modals verbs is one of the basic assumptions of generative grammar.<sup>131</sup>

French has been observed to allow syntactic structure described as the Verbal Complex by Emonds (1999a). Using examples from Kayne (1975), Emonds argues that French auxiliary verbs *avoir* ‘have’ and *être* ‘be’ are of the same category V as main verbs, giving the verbal complexes the characteristics of V’ – V. This claim is justified by the deployment of rules such as Auxiliary Deletion, Clitic Placement, Leftward Quantifier Movement and Subject-Clitic Inversion (Kayne 1975: 99), and the fact that negative elements (*pas* ‘not’, *plus* ‘no more’) follow a finite verb, regardless of whether it is an auxiliary or not (Emonds 1999a: 59).

In contrast, Emonds (1976: ch. 6) shows that English modals are indeed of category M distinct from V. The distinction is supported by the existence of Tag Question Formation, VP Deletion, Number Agreement with the subject, behaviour of the negative *not* and the Subject-Auxiliary inversion, rules that require M and V being distinct.

The difference between English and French indicates how much auxiliaries can vary across languages. The descriptions of French and English auxiliaries represent two opposite points on our semi-lexical scale. The French auxiliaries entering V’ – V structures display lexical properties (Emonds 1999a), whilst English modals contain purely functional attributes (Palmer 1986). I have suggested, for the most part in chapter 3 of this thesis, that Czech modals have both functional and lexical status, placing their representation as neither fully functional nor fully lexical categories.

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<sup>131</sup> The example of this view, as well as an argument for ModP and its realization in the structural hierarchy, can be found in Ouhalla (1991).

Emonds (1999a: 60) introduces a crucial suggestion within the framework of generative grammar: the possibility that the grammar can generate consecutive verbs in a single VP. Having seen the multiple verb structures (verbal clusters) Czech modals can be part of, this assumption becomes essential to our hypothesis of the derivation of Czech CVD.

In the course of this chapter, I will adopt the position that regards Czech modals as semi-lexical verbs of the category V. In accordance with this approach, I will show that although they are derived in a specific syntactic position, there is no reason to introduce ModP for modal verbs in Czech. This theoretical claim is motivated by the behaviour of the modal CVD that has been observed so far. I propose that the structure involving a modal verb with a multiple infinitival complement<sup>132</sup> is syntactically akin to VP extended by a semi-lexical position. I will call this position  $v^\circ$  and show that the whole CVD structure is derived as a vP with a modal in its head and any subsequent infinitives in the single VP complement with a flat structure (Emonds 1999b) status.

The advantage of this structure is that it avoids any unnecessarily complicated ‘super’ trees similar to Cinque (1999) and explains the main factors playing a part in the complex predication of the CVD structure, such as the underspecified theta grid of its semi-lexical participants observed in chapter 2.

What follows is a brief review of the challenge of deriving multiple Vs in a single VP structure (6.2.), demonstration of some cross-linguistic evidence in favour of introducing a semi-lexical position for Czech modal verbs (6.3.), revision of the syntactic status of  $v^\circ$  and its applicability to our hypothesis (6.4.) and finally an analysis of how the vP structure in Czech is derived (6.5. and 6.6.).

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<sup>132</sup> It is first mentioned in the datum (1) in chapter 1.

## 6.2. The problem of multiple V derivation

Any principle of consecutive Vs derived in the same clause will have to ensure that it disallows the ungrammatical occurrence of two main (lexical) verbs in the same clause. Emonds suggests that this can be achieved by revising the subcategorization framework, assuming that only auxiliaries select another V category and thus contain the feature +\_\_[V]. All other verbs would have -\_\_[V] (Emonds 1999a: 60).

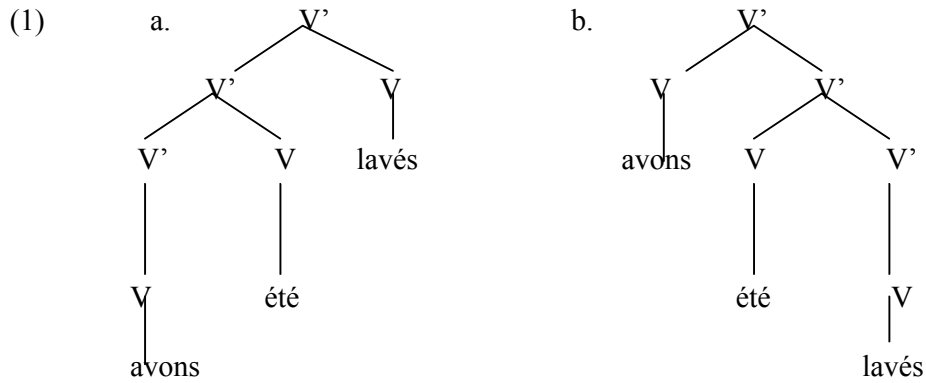
The previous chapter demonstrated that Czech modal verbs, although different from auxiliaries due to their semi-lexical character, differ indeed from full lexical verbs in their subcategorization frame. Their lexical entry, however, involved the +\_\_[V] feature, as they select only infinitival complements.<sup>133</sup> Wherever a verb selects a non-verbal complement, it is not semi-lexical, as was seen in some examples of verbs phonetically identical with modals.

The conclusions drawn from the analysis of data in chapters 1 – 4 allows us to assume that Czech syntax forces the derivation of multiple Vs in a monoclausal structure. The syntactic theory that will be proposed here originates in Emonds (1999a), who shows that verbal complex in French enables derivation of two Vs in a single constituent, but not as two sister constituents. Such a structure involves the rule  $VP \rightarrow \dots V' \dots$  and is specified in two ways:

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<sup>133</sup> There are cases that seem to show that full lexical verbs can optionally select infinitives as their complements in Czech syntax. However, wherever this is the case, we are dealing with two clauses (predicates), rather than a single CVD. The subcategorization frame in this case is \_\_\_\_(CP), rather than \_\_\_\_(V):

- (i)     Petr se    rozhodl       CP přečíst    tu    knihu  
         Petr refl   decidePast       Asp read    that   bookAcc  
         Petr decided to read that book.



(Emonds 1999: 61)

The tree in (1a) constitutes a left-branching verbal complex structure, whilst (1b) is a right branching verbal complex structure. Both are realizations of the same  $VP \rightarrow \dots V' \dots$  rule. The rule generates strictly binary branching structures, but does not specify if either (1a) or (1b) is a preferred representation. This causes a syntactic ambiguity that motivates a later abandonment of the rule in favour of a flat structure analysis (Emonds 1999b, 2000). The flat structures deviate from mainstream generative syntax by assuming a non-binary branching. I will further show, however, that there are significant reasons to introduce a single ‘flat’ VP containing multiple Vs into Czech modal syntax, which outweigh the possible disadvantages of this approach.

### 6.3. Derivation of modals in cross-linguistic perspective

Consideration of the way in which modal verbs are inserted into the syntactic structure should account for the following:

- (2) a. The status of modals in terms of functional v. lexical dichotomy.
- b. The behaviour of modal verbs within their immediate syntactic environment (their subcategorization frame).

I have previously suggested that Czech modals are semi-lexical categories that are looking for infinitival complements, but this is not a universal characteristic of modal verbs across languages. Comparative research shows that the various differences in the cross-linguistic data with respect to modality have to be resolved by different structural representations in syntax.

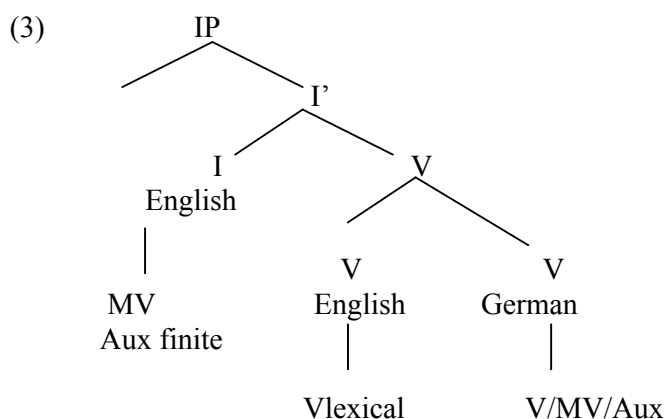
### 6.3.1. English, German and Czech: a comparative analysis

Several works dealing with the syntactic status of modal verbs<sup>134</sup> have shown that the point at which modals are inserted into the derivation indeed varies across different languages. It is argued that modal verbs in Modern English are purely functional categories, and accordingly are inserted high in the structure under the IP (Chomsky 1957, Abraham 2002). In contrast, German modals (and auxiliaries in general) are believed to be very similar syntactically to ‘lexical verbs’, and accordingly are inserted low in the structure as members of head-final VPs (Abraham 2002). Both positions have been justified by the very distinctive functional/lexical behaviour of English and German modal verbs. The findings regarding different syntactic positions of modals and their relations to both auxiliaries and full verbs can be summarized, for example, by the following tree structure in (3) (MV = modal verb):

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<sup>134</sup> See Barbiers (2002) for a recent compendium, Butler (2003) for minimalist treatment of epistemic v. root distinction.





(adapted from Abraham 2002: 24)

The tree representation in (3) demonstrates that modal verbs in different languages enter syntactic derivation at different points, lower or higher depending on their morphosyntactic properties. The arguments in favour of placing German modals under V at the same level as lexical verbs are based both on their morphology and syntactic behaviour. Let us mention a few and compare them with what we observed in the case of Czech modals in chapter 3.

German modals have fully established morphological paradigms that distinguish them from those in English (Abraham 2002). For instance, they are able to assume plural forms, past tense and perfect forms. Moreover, whereas *to*-infinitive is disallowed in English modal structures, it is accessed by German modals (*zu*-infinitive as in *zu können* ‘\*to can’). Similar observations were made in the case of Czech modals in chapter 3. We saw that they displayed full past, present and future paradigms in both singular and plural forms, making use of the ‘true’ auxiliaries in the same way as lexical verbs.

The syntactic argument concerns a unified syntactic behaviour of German modals and lexical verbs. For instance, lexical verbs in English need *do*-support to

enter negation structures, whereas *do*-support is redundant, yielding ungrammaticality in the case of modals:

- (4) a. John does not (doesn't) work  
 b. \*John works not.  
 c. John must not work.  
 d. \*John does not must work.  
 e. \*John does must not work.

Lexical verbs in German, on the other hand, do not require any form of *do*-support in negation structures. They behave in exactly the same way as modals in this respect:

- (5) a. Er sieht das nicht. *lexical verb*  
 he see3sg it not  
 'He does not see it.'  
 b. Er kann das nicht (sehen). *modal verb*  
 he can3Sg it not seeInf  
 'He cannot see it.'

Both the lexical verb and the modal show the identical negation pattern in (5). A similar fact was, again, observed in Czech, where a negative prefix *ne-* can attach to both modals and lexical verbs but not auxiliaries in negation structures. The relevant data, also discussed in chapter 3, are demonstrated in (6) below:

- (6) a. Včera jsem **nečetl** tu knihu.  
 yesterday AUX1Sg readNEGPast that bookAcc  
 'I didn't read that book yesterday'.

b. Včera jsem **nemusel** číst tu knihu.  
 yesterday AUX1Sg mustNEGPast readInf that bookAcc  
 ‘I didn’t have to read that book yesterday’.

c. \*Včera **nejsem** četl tu knihu.  
 yesterday NEG AUX1Sg readPast that bookAcc  
 ‘I didn’t read that book yesterday’.

d. \*Včera **nejsem** musel číst tu knihu.  
 yesterday NEG AUX1Sg mustPast readInf that bookAcc  
 ‘I didn’t have to read that book yesterday’.

I suggested that the negation of the modal *muset* ‘must’ by the prefix *ne-* in (6b) points out its lexical status and distinguishes it from the ‘be’ auxiliary *jsem* that cannot be negated (6c-d).

To summarize the different situations in German and English, it is possible to argue that whilst modals in German syntactically behave like lexical verbs, they are strictly functional in English, on a par with functional items such as *do* in *do*-support. This causes the English modals to compete with other auxiliaries for the same syntactic position (I°).

The existence of the verb initial movement in German (Abraham 2002) provides the evidence for the above. English prohibits lexical verbs from climbing higher in the structure to assume the verb initial position, since it is obligatorily taken by the *do* auxiliary or a modal. However, the auxiliary position cannot be occupied by both *do* and the modal since they are of the same type:

- (7) a. \*Reads John often?  
 b. Does John often read?  
 c. Must John often read?  
 d. \*Does must John often read?  
 e. \*Does John must often read?

The English structure in (7) forces the lexical verb *read* to stay low in the structure in its original position (hence the ungrammaticality of (7a)). Moreover, it shows that only one functional verb can occupy the auxiliary position (7d-e). In German, however, the verb initial structure is possible:

- (8) a. Sieht Klaus das?  
 See3Sg Klaus it  
 ‘Does Klaus see it?’  
 b. Muss Klaus das (sehen)?  
 must3Sg Klaus it seeInf  
 ‘Must Klaus see it?’

The example in (8a) illustrates that German employs the leftmost position of lexical heads to produce inverted question structures. As in the case of negation, modals and lexical verbs show the same syntactic patterns.

The Czech situation regarding (8) is more complicated because it involves a whole complex of word-order phenomena. We can, nevertheless, trace similar patterns in the simple VP (9a) and modal CVD structure (9b):

- (9) a. Vidí to Jan? *VP structure*  
 see3sg it Jan  
 ‘Does Jan see it?’

b. Musí to Jan vidět? *CVD structure*  
 must3Sg it Jan seeInf  
 ‘Must Jan **see** it?’

c. Vidět to Jan musí? *CVD structure*  
 seeInf it Jan must3Sg  
 ‘**Must** Jan see it?’

It was noted in chapter 3 that the ability of the members of the CVD structure to enter complex word-order relations such as (9b-c) above supports their lexical interpretation. We saw that the role of these relations in Czech is to distinguish between Topic and Focus. (9b) shows that the modal *muset* ‘must’ can attain the verb initial (topic) position. Similarly, also the lexical infinitival complement of the modal – *vidět* ‘see’ – can occupy the same position in (9c). It is a question of whether the structures in (9b) and (9c) are the result of a leftward movement of a lexical V in Czech similar to that in German or whether they are realizations of Topic-Focus movement or scrambling (Bailyn 2001, 2003). Whilst our objective is not to analyse the V’s initial syntactic position in Czech, the processes described in (8) and (9) provide additional support to the hypothesis that Czech modals are inserted low in the structure under V, following the pattern of German rather than English modal verbs.

### 6.3.2. The situation in Czech

The comparative data investigated above suggest that there is enough evidence to treat Czech modal verbs as being close to German modals in terms of their functional v. lexical characteristics. Furthermore, the observations made so far suggested that modals are inserted in the derivation according to the relation between

their lexical and functional attributes.<sup>135</sup> We have seen that modal verbs have been placed outside the VP projection in English and in the lowest head inside the VP projection in German. English modals are, therefore, functional categories competing for the auxiliary position in the head of IP, while German modal verbs are inserted into the same syntactic position in the head of VP as lexical verbs.

Czech modal verbs are neither auxiliaries nor fully lexical verbs. The evidence was reviewed by chapter 3 and the comparison with both German and English shows that there has to be a specific syntactic position for Czech modals in the derivation, between the purely functional IP projection and the lexical VP projection. The final and strongest argument against inserting Czech modals into the head of IP is that they can co-occur with the ‘be’ auxiliary, a primary occupier of this position, in the CVD structure:

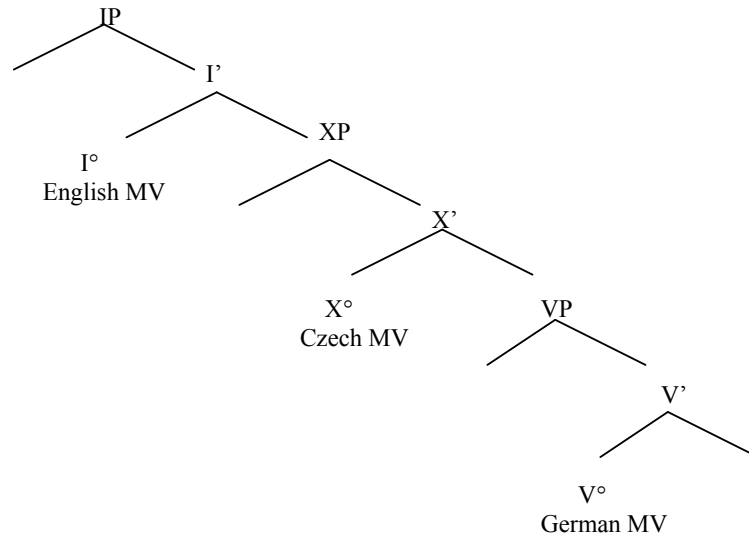
- (10) Včera        jsem        musel        číst        tu       knihu.  
                  yesterday AUX1Sg must3SgPast readInf that bookAcc  
                  ‘I had to read that book yesterday’.

The principle that two auxiliaries cannot be in the same I° position, observed in English *do*-support and modal structures (*\*Does must John often read*), should rule (10) out if the modal *muset* ‘must’ was considered to be of the same type as the ‘be’ auxiliary. The fact that (10) is possible demonstrates that the modal is not inserted in I° in Czech.

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<sup>135</sup> This relation has been viewed as a result of the grammaticalization process (Hopper & Traugott 1993). Although it is a diachronically motivated notion and thus not relevant to our framework, grammaticalization probably played an important part in the evolution of modals across languages. The existence of elliptic *I must away* in Shakespearean English points towards the fact that English modals used to be less dependent on the lexical complement (and therefore less functional), whereas the ungrammaticality of *kann(\*t)*, *darf(\*t)* and *muss(\*t)* shows that German modals are not (yet?) fully lexical. Similarly, grammaticalization of modals in Slavic has been recently observed in Hansen (2005).

Given the investigation so far, the preliminary universal syntactic position for Czech modals appears as follows:

(11) *Derivation of modal verbs (MV) across languages*

The representation in (11) predicts an intermediate head between  $I^\circ$  and  $V^\circ$  that hosts modal verbs in Czech. The natural question is, what is the syntactic status of this hypothetical head? We have seen that Czech modals are semi-lexical members of more complex predicates, which justifies their position outside the simple VP.

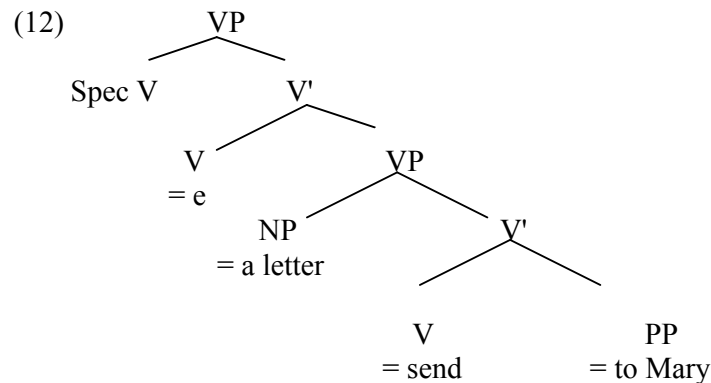
Consequently, I suggest that the modal head is in fact  $v^\circ$  and that Czech modals project  $vP$ . In the process of syntactic derivation, they are taken from the Lexicon with their specific subcategorization frame containing  $+_{\text{--}}[V, \text{INF}]$  feature that allows them to be inserted into  $v^\circ$  and take lexical VP complement.

Both modal verbs and their infinitival complements contribute to the complex predicate structure by projecting vP in a sense close to that accorded by Chomsky (1999). However, our proposal is not entirely based on Chomsky's minimalist

syntax.<sup>136</sup> To understand the differences and see the main motives for adopting the vP projection into our framework, let me first briefly recapitulate the origins of v° in syntax and show why it is the best candidate to become a semi-lexical head hosting Czech modal verbs.

#### 6.4. The role of vP in syntax and the Lexicon

The hypothesis that VP is more complex than previously thought has its origin in Larson's (1988) theory of VP Shells. Larson argues that the double object constructions in English (*John sent a letter to Mary*) are derived as follows:

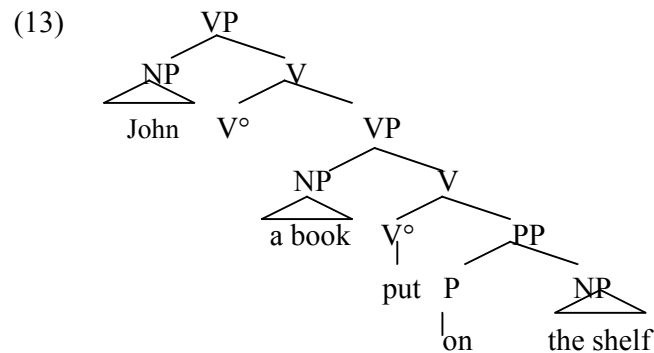


The main advantage of projecting more than one verb phrase in (12) is that it produces a strictly binary branching structure. The higher VP consists of an empty (light) V taking a lower VP complement with the specifier *a letter* and the head *send*. Consequently, Larson's light verb is perceived as a syntactic position rather than an item with lexical content. Independently from Larson, Hale & Keyser (1991, 1993

<sup>136</sup> Although I partially use the standard terminology devised in the minimalist syntax and Chomsky's understanding of interpretation at LF plays a major role in solving the epistemic v. root problem (see chapter 10), the theoretical framework of this thesis is not primarily minimalist.



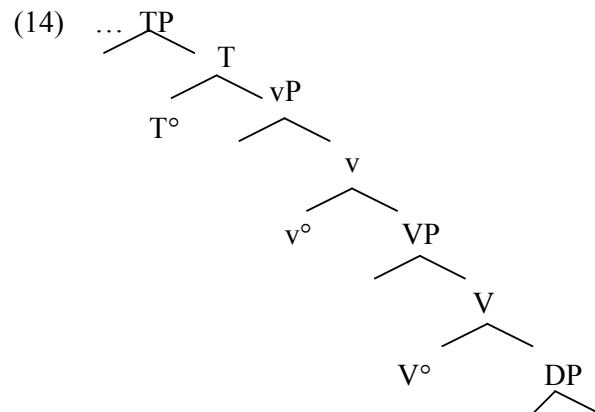
and 1997) derive a similar light verb structure from their configurational approach to event structures. They suggest that the argument structure of a predicate and the  $\theta$ -role assignment is realized all by syntactic configurations. Accordingly, the thematic structure of the English clause *John put a book on the shelf* looks as follows (cf. Lin 2000; 10):



The structure in (13) illustrates the thematic relations of the causative predicate *put* by introducing the syntactic configuration that employs multiple VP projections. The higher VP represents the causing component of the event, with *John* as the causer. The lower VP can be interpreted as the event of change, with the final result of the book being on the shelf. The NP in the lower VP Spec, *a book*, is the subject of the change of the book's location. Specifically by entering the lower VP subject position, the NP *a book* is given a  $\theta$ -role of Theme. The NP *John* is in the higher Specifier position and gets a  $\theta$ -role that can be called Cause.

Chomsky (1995: 312-15) adopts the configurational approach for the explanation of how theta-theory works. In general, the Minimalist Program (Chomsky 1995, 1998, 1999) implements Larson and Hale & Keyser's assumption that light verbs are abstract entities in syntax. The category *v* has been present in generative

syntax since Chomsky (1957). In the current syntactic theory, ‘Chomskyan light verb’ (Lin 2000: 22) is mostly defined as an abstract syntactic category, an empty place holder with very limited semantics and null phonetic representation.<sup>137</sup> Its role is mainly to uphold the binary branching structure in those predicates that involve complex inner structure (multiple V projection). Thus Chomsky (1998, 1999) uses the light verb (*v*) as the head of a transitive predicate. This head has purely functional attributes; the category *v* belongs to the group of the *core functional categories* (Chomsky 1998: 15) next to *T* (responsible for auxiliaries) or *C* (involving sentential operators). As in other categories, *v* is drawn from the Lexicon by the process of Numeration (Chomsky 1995). It projects *vP*, which is identified as a ‘phase’ at the level of syntactic derivation and ‘interpretational unit’ at the level of Logical form (Chomsky 2001). The structural representation of the verbal domain in the Minimalist Program then looks as follows:



<sup>137</sup> Whilst *v* is crucial to the theory presented here, it does not have the status of an abstract syntactic entity. In other words, there is a reason why I propose *v°* as a structural position for the insertion of TMVs in Czech. If *v* was just an empty placeholder, its use in the system (preferred, for instance, to the use of the symbol  $\Omega$ ), would not be justified.

I adapt Chomsky's concept of a light  $v$  category as best fitted to describe the syntactic position for the insertion of Czech modal verbs into the syntactic structure. There are several valid reasons for it, enumerated below in no particular order of importance.

Firstly, I will work with the assumption that multiple VP projections are neither necessary nor possible in the derivation of Czech modal structures, nor any other V+V structures in Czech syntax that contain semi-lexical elements followed by full lexical verbs. Even though the data in chapter 1 suggested that verbal domains in Czech can become quite large, I argue for a single VP complement of  $v^\circ$  on grounds of parsimony. In the simple modal structures, a modal verb takes a lexical verb in the infinitive as its complement. It means that it has to be in the head of a projection immediately above the VP. I have shown that the distributional properties of Czech modal verbs allow them to co-occur with true auxiliaries in the single clause and the auxiliary head ( $T^\circ$ ) is therefore unavailable. Logically, our candidate has to be the  $v^\circ$  borrowed from Chomsky's framework, projecting  $vP$  and taking the VP complement.

The second reason for adopting the  $vP$  structure is the way it deals with the issue of  $\theta$ -role assignment. I have proposed that the Czech CVD forms a complex predicate. The question of how complex predicates handle argument structure and  $\theta$ -role assignment has been at the centre of several influential theories.<sup>138</sup> Czech modal verbs and their VP complements have a joint argument structure similarly to English light V+N structures. We have seen in chapter 2 that the most attractive solution to the complex argument structure in V+N structures such as *John took a walk to the park* was Hoshi & Saito's LF incorporation (i.e. processes of raising/lowering at LF by which the verb gets into position to assign  $\theta$ -roles and/or undergo argument

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<sup>138</sup> See chapter 2.

transfer). However, the use of the vP structure for the configurational interpretation of the  $\theta$ -role assignment in Chomsky (1995) provides the opportunity to explain the joint argument structure of the Czech modal structures without reference to any movements at LF. Basically, all  $\theta$ -roles are assigned correctly just by introducing the vP projection in the sense of Hale & Keyser's (1997) configurational approach.

The third and final argument for Czech modals to appear in  $v^\circ$  is that the vP projection can readily explain the dichotomy between root and epistemic interpretation at LF. This is achieved by incorporating the general understanding of phases into our theory.<sup>139</sup> In Chomsky (1999), the two phases of derivation are CP and vP. Both have predicative character at LF, identical with the earlier notions of sentential and verbal predication. This will play an important role in distinguishing between root and epistemic readings in chapter 10. The idea is simplified here as follows: CP and vP become domains of interpretation at LF. All modal verbs quantify over the set of possible worlds.<sup>140</sup> To be interpreted as epistemic, a modal verb has to raise to the position above CP at LF. To become root, the modal raises to the position immediately above vP.

Although the vP projection as proposed here is based on Chomsky's minimalist syntax, there are also important differences. The  $v$  category in our system is semi-lexical, not purely functional. It functions as an intermediate category between lexical V and auxiliary (C, T) in our theoretical framework. In this guise, it can naturally hold semi-lexical items, wherever they appear in the final structure.

Furthermore, this category is not necessarily empty.<sup>141</sup> This is obvious since I have defined it positively as a semi-lexical syntactic position hosting modal verbs, in

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<sup>139</sup> This issue of root v. epistemic is further pursued in chapters 7-10 of the thesis.

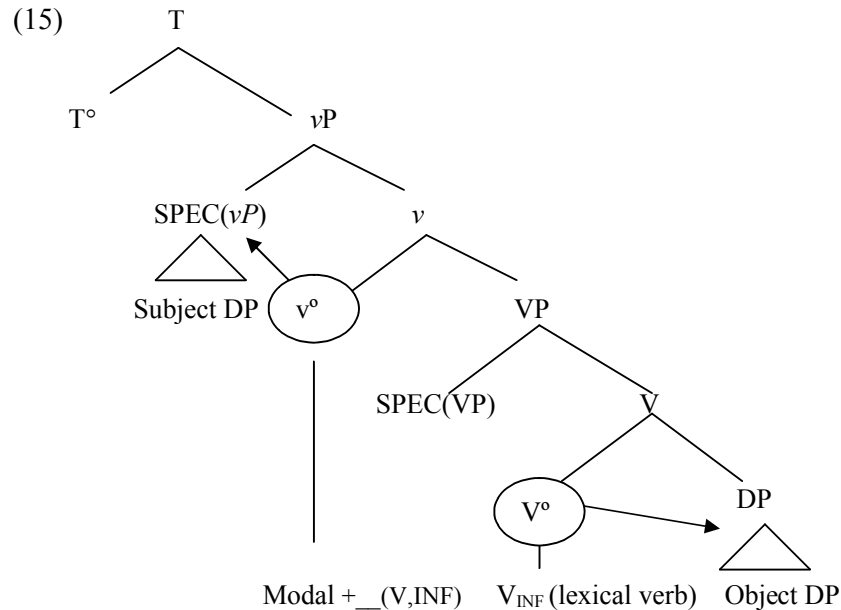
<sup>140</sup> See chapter 7.

<sup>141</sup> Although it still has restricted semantics.

contrast to the negative definition of  $v^\circ$  as an abstract place holder. I propose, however, that in those non-modal structures involving single lexical verbs in Czech (*Jan čte knihu* ‘Jan reads a book’),  $v^\circ$  is indeed phonetically null. The final two sections will demonstrate how the insertion of Czech modal verbs into  $v^\circ$  works.

### 6.5. Derivation of simple modal CVDs in Czech

I call a modal CVD structure ‘simple’ when it contains a modal verb followed by a single lexical infinitive to distinguish them from those CVDs where the modal takes a multiple infinitival structure (infinitive cluster) as a complement. The hypothesis for the syntactic representation of the simple modal structure in Czech is finalized as follows:

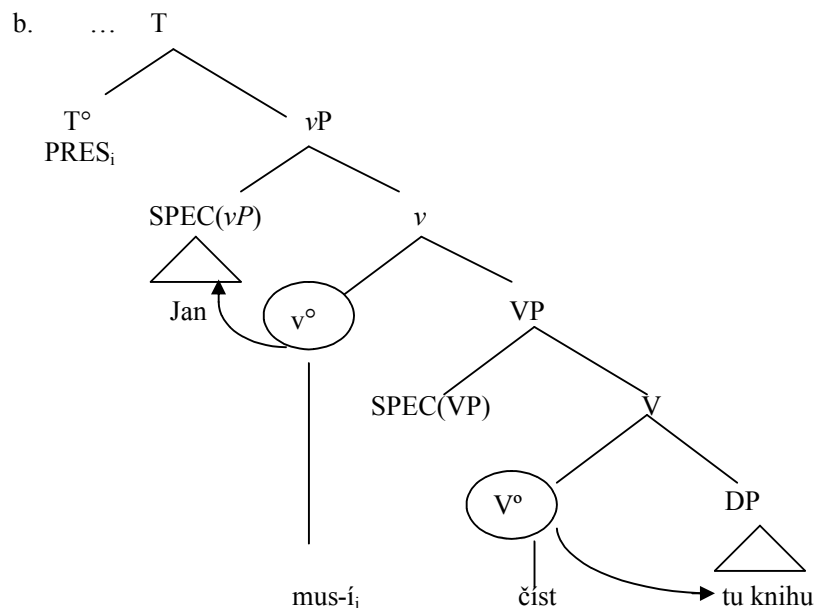


$V^\circ$  is the head of VP, whilst  $v^\circ$  is the head of vP. (15) demonstrates that modal verbs and their infinitival complements share the argument structure by jointly

assigning all respective theta-roles. The specifier of vP contains the subject of the sentence. The position of modal verbs in the head of vP determines their ability (outlined by the arrow) to assign a  $\theta$ -role to the subject. The specifier of VP is inaccessible for the sentence subject, preventing the complement of the modal from being anything other than an infinitival verb (e.g. it cannot be CP or IP). The infinitive is able to assign the object  $\theta$ -role to its immediate DP complement. The structure in (15) thus justifies the hypothesis of the joint thematic framework: whilst the modal verb assigns a  $\theta$ -role to the subject of the sentence, the infinitive is able to assign a  $\theta$ -role to the object. The higher position of the modal then enables it to account for possible agreement and tense features.

I adopt (15) for the simple modal CVDs in Czech. It works in the following way regarding the present tense structure:

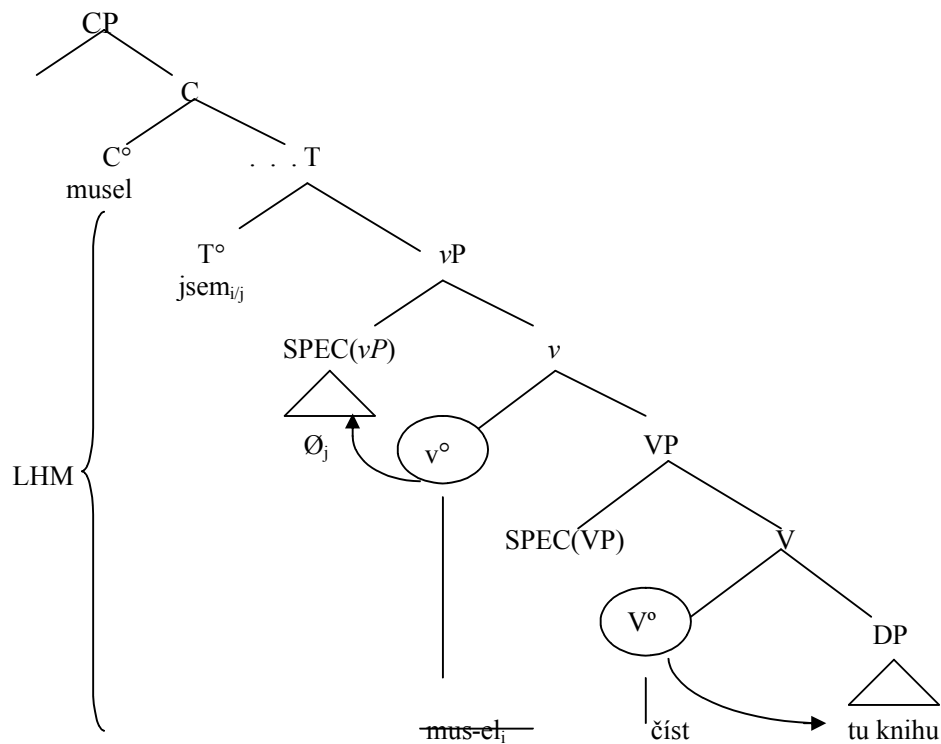
- (16) a. Jan    musí    číst    tu    knihu.  
          Jan   must3Sg   readInf   thatAcc   bookAcc  
          ‘Jan must read that book.’



(16b) is the representation of (16a). The subject of the sentence, *Jan*, is in the Spec vP position to be assigned its  $\theta$ -role by the modal. The modal *muset* is in the head of the vP. The subcategorization frame of *muset* contains the information that it has to select an infinitival verb (the  $+\_\text{[V, INF]}$  feature), which it does by having a VP complement with the infinitival head. The infinitive in  $V^\circ$  then assigns a  $\theta$ -role to the object *tu knihu* ‘that book’. The subcategorization and joint  $\theta$ -role assignment are structurally realized in exactly the same way when the modal *muset* ‘must’ has the analytical past and future forms. The 1<sup>st</sup> person past tense structure has the following character:

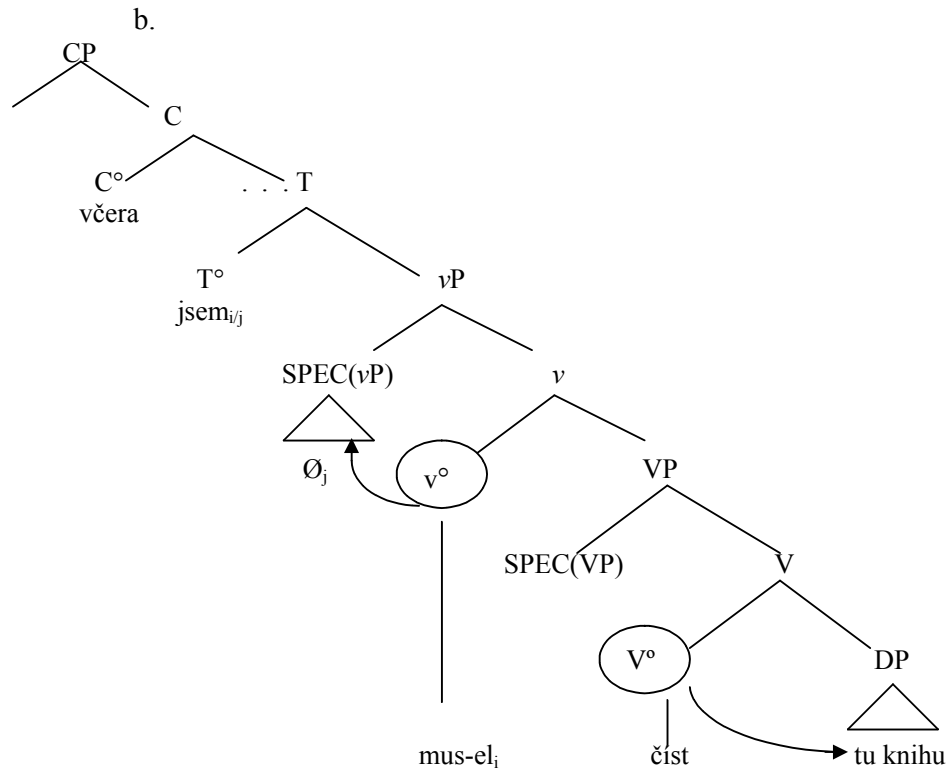
- (17) a. Musel      jsem      číst      tu      knihu.  
           mustPast AUX1Sg readInf thatAcc bookAcc  
           ‘I had to read that book’.

b.



The modal in (17) assigns a theta-role to the phonetically null subject (bearing Gender, Person and Number features) in the SPECvP and then undergoes a Long Head Movement (LHM) to assume the sentence-initial position in the head of CP. The LHM in Czech can be blocked, as already pointed out in chapter 3, by inserting adverbials into the sentence-initial position (as in (18) below) or by including a personal pronoun in (19).

- (18) a. Včera jsem musel číst tu knihu.  
 yesterday AUX1Sg mustPast readInf thatAcc bookAcc  
 ‘Yesterday, I had to read that book.’

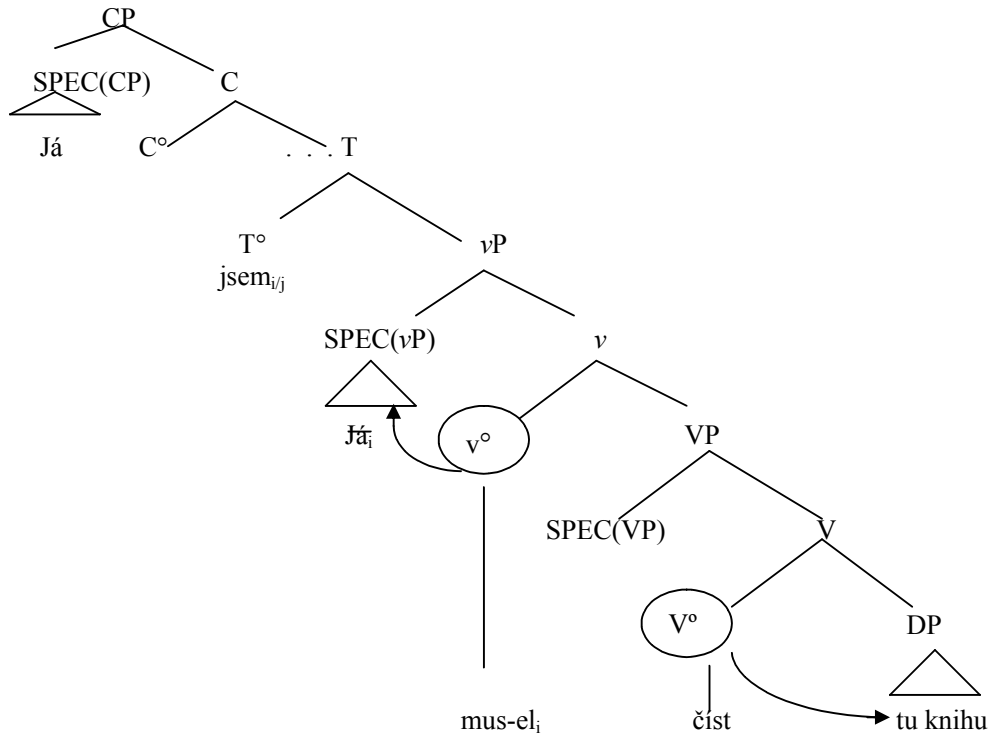


The adverb *včera* ‘yesterday’ is inserted into the C° and the modal stays low in v°. Where the SPECvP is phonetically realized as a personal pronoun, it can also occupy the sentence-initial position in SpecVP and thus block the LHM:



- (19) a. Já jsem musel číst tu knihu.  
 I AUX1Sg mustPast readInf thatAcc bookAcc  
 ‘I (and not somebody else) had to read that book.’

b.



The personal pronoun *Já* is generated in the subject position but occupies the sentence-initial position in (19b)<sup>142</sup>. This also forces the modal to stay in v°.<sup>143</sup>

<sup>142</sup> If there is a C element already present in the sentence-initial position, the phonetically realized subject has to stay in the SPECvP:

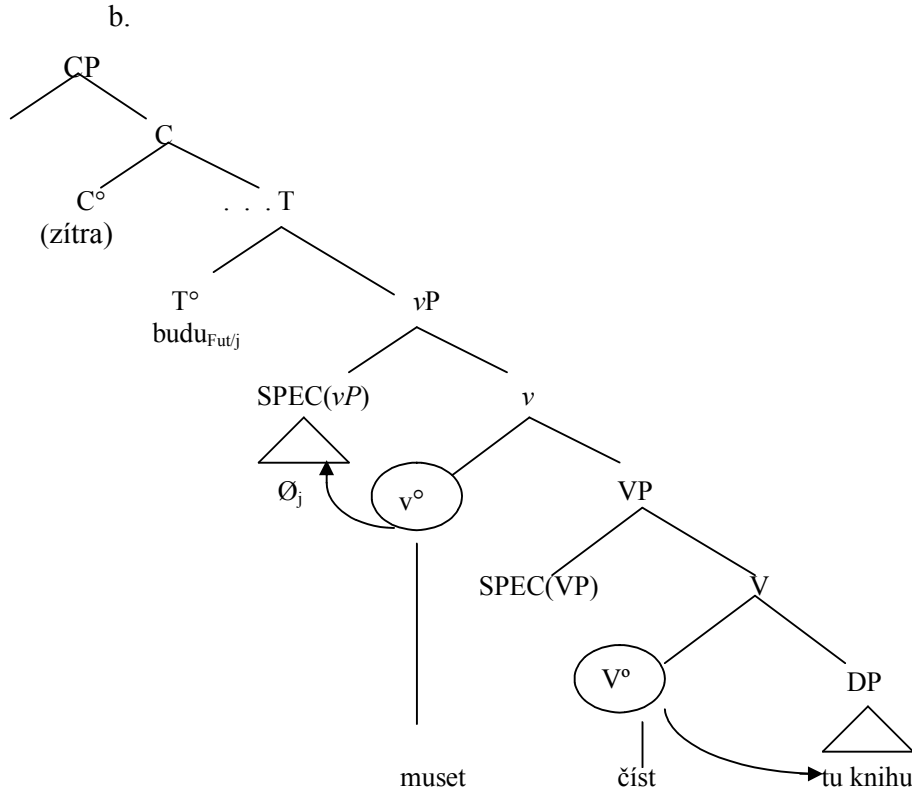
- (i) Proč \*(já) jsem (já) musel číst tu knihu.  
 why I AUX1Sg I mustPast readInf thatAcc bookAcc  
 ‘Why I had to read that book.’

<sup>143</sup> The structure with both the modal and the personal pronoun in CP is ruled out:

- (i) \*Já musel jsem číst tu knihu.  
 I mustPast AUX1Sg readInf thatAcc bookAcc

Finally, the analytical future tense structure is represented by (20) below:

- (20) a. (Zítřa) budu muset číst tu knihu.  
tomorrow AUX1SgFut mustInf readInf thatAcc book  
‘I will have to read that book (tomorrow).’



The most important difference from the analytical past structure is that the auxiliary *budu* in (20) is responsible for all tense features. The modal has the infinitival form (*muset*) but it can still assign a subject  $\theta$ -role to the phonetically empty subject. There is no LHM akin to what we have seen in (19), even when the CP remains empty.<sup>144</sup>

<sup>144</sup> The structure *Budu muset číst tu knihu* ‘I will have to read that book’ is perfectly acceptable, however the possible equivalent of LHM is questionable in terms of grammaticality:

- (i) ??Muset budu číst tu knihu.  
mustInf Aux1SgFut readInf thatAcc bookAcc  
‘I will HAVE TO (and not want) read that book.’

Going back to the universal syntactic representation of the simple modal CVD structure in (15), there is one more relevant factor to be accounted for. In accordance with the configuration approach to  $\theta$ -roles, the DP object would actually have to move to the Spec VP (subject position) to get its  $\theta$ -role properly assigned by the lexical verb and satisfy the EPP at the same time.<sup>145</sup> This is an open option in (15), as Spec VP is an empty position, with no invisible syntactic category (such as PRO).

The proposed tree in (15) can well explain the simple modal structures with single infinitival complements. However, what if a modal is a member of a much larger verbal structure that motivated our introduction of CVD in Czech?

#### 6.6. Derivation of large modal CVDs: employing flat structures

So far, we have investigated simple CVDs, i.e. the structures with a modal verb immediately followed by a lexical infinitive. The main objective of this thesis is, however, to provide a satisfactory syntactic analysis of the structures with multiple infinitival complements, as represented by (21):

- (21) Jan    musí                chtít            začít            číst            tu            knihu.  
        Jan must3SgPres wantINF beginINF readINF thatAcc bookAcc  
        ‘Jan must begin to want to read that book.’

The example in (21) illustrates the ability of Czech to involve considerably large verbal domains. There are two modals in (21); TMV *muset* ‘must’ in a finite form and the infinitival OMV *chtít* ‘want’, the aspectual verb (AV) *začít* ‘begin’ and the fully lexical verb (LV) *číst* ‘read’. (21) has been identified in chapter 1 as the CVD

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<sup>145</sup> The EPP (Extended Projection Principle) states that every verb interpreted at LF has a separate DP subject.

structure containing the finite semi-lexical verb and a V complement built of successive infinitives. The interrelations of the V elements within the CVD create important combinatory rules and locality constraints for some members of the CVD.

The crucial data are summarized below:

- (22) a. Jan musí (TMV) začít (AV) chtít (OMV) číst (LV) tu knihu.  
 Jan must3SgPres beginINF wantINF readINF thatAcc bookAcc  
 ‘Jan must begin to want to read that book.’
- b. \*Jan musí (TMV) číst (LV) začít (AV) tu knihu.  
 Jan must3SgPres readINF beginINF thatAcc bookAcc  
 ‘Jan must read to begin that book.’
- c. Jan chce (OMV) začít (AV) číst (LV) tu knihu.  
 Jan want3SgPres beginINF readINF thatAcc bookAcc  
 ‘Jan wants to begin to read that book.’
- d. Jan začíná (AV) chtít (OMV) číst (LV) tu knihu.  
 Jan begin3SgPres wantINF readINF thatAcc bookAcc  
 ‘Jan begins to want to read that book.’
- e. \*Jan začíná (AV) muset (TMV) chtít (OMV) číst (LV) tu knihu.  
 Jan begin3SGPres mustINF wantINF readINF thatAcc bookAcc  
 (‘Jan begins to must to read that book.’)
- f. \*Jan chce (OMV) muset (TMV) číst (LV) tu knihu.  
 Jan want3SgPres mustINF readINF thatAcc bookAcc  
 (‘Jan wants to must to read that book.’)

Each sentence in (10a-f) contains a large CVD with the subject ‘*Jan*’. The analysis of these structures in chapter 1 suggested that the leftmost position of the

CVD contains a non-infinitival semi-lexical verb. It is, however, even more restricted as an obligatory position for TMVs.<sup>146</sup>

The examples (22e-f) show that if there is a TMV present in the structure, it has to be in that position. Any different ordering leads to ungrammaticality. There are two explanations of this fact. Firstly, there is a difference between TMVs on one hand and OMVs/AVs on the other hand, analysed in chapter 4, in terms of the relation between functional and lexical properties. I have shown that TMVs lack some substantial lexical attributes such as ability to nominalize, which is present in both OMVs and AVs. The former are therefore expected to be more restricted in their position in the CVD structure, whereas the latter can change positions more freely.

Secondly, TMVs differ from OMVs and AVs in their ability to attain epistemic interpretation.<sup>147</sup> To be able to do so, they have to be inserted into the derivation high in the leftmost position of the CVD to assume the appropriate scope position later at LF, as will be discussed in chapter 10 and partially in chapter 7.

I have just shown in 6.5. above that the leftmost position in the CVD structure is syntactically  $v^o$  that takes a VP as a complement. In the case of simple modal CVDs, the VP complement involved a single lexical infinitive, which yielded a straightforward derivational structure in (15). The data in (22) demonstrate that large modal CVDs are different since they contain multiple infinitival complement of  $v^o$ .

The main premise of this chapter is that the basic derivational principle of modal structures in Czech is maintained regardless of whether we deal with simple or large CVDs. According to this premise, all CVDs in (22) are vP projections, just as those in (15-20). This claim creates the crucial question regarding the structural status of the VP complement consisting of the infinitive cluster in derivation of large modal

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<sup>146</sup> It can, however, be occupied by other semi-lexical participants in the CVD structure (OMVs, AVs) in the case that a TMV is missing.

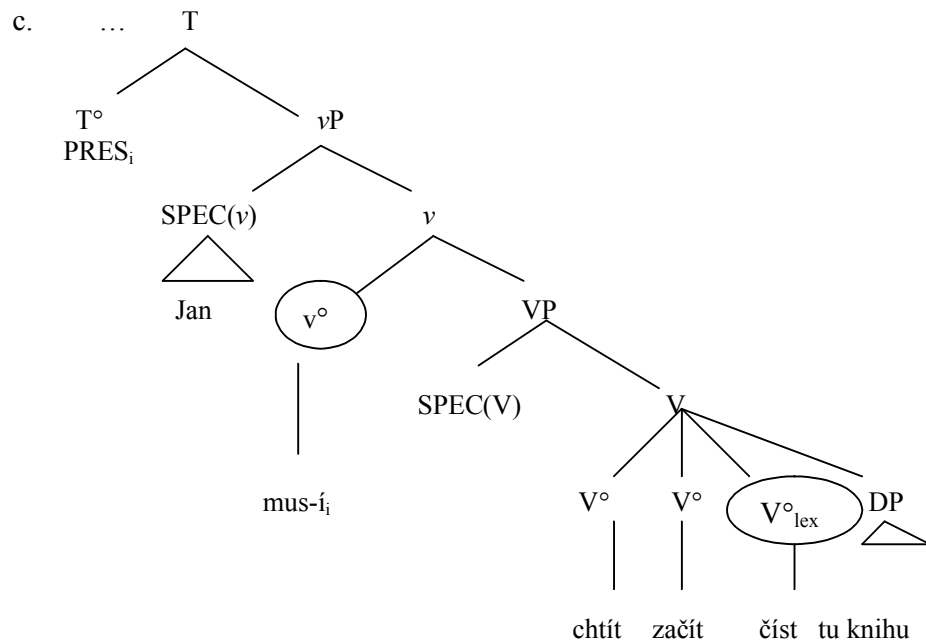
<sup>147</sup> One exception is the TMV *smět* 'be allowed'.

CVDs. What is the inner structure of such a VP? Can we still account for its syntactic behaviour by maintaining a strictly binary branching structure?

The Czech data has shown that TMVs cannot be part of the VP complement. Moreover, lexical infinitives have to be in the rightmost position of the VP to be able to assign a  $\theta$ -role to the object of the sentence. This requirement is illustrated by the grammaticality issue in (22b) where the lexical verb *číst* ‘read’ exchanges its position with the aspectual *začít* ‘begin’. All other members of the VP can exchange their positions freely. In the light of these facts, I suggest that the most adequate solution to the problem of the inner structure of the VP complement is to adopt a flat structure interpretation of VP in large modal CVDs. This is illustrated in (23) below:

- (23) a. Jan musí (TMV) chtít (OMV) začít (AV) číst (LV) tu knihu.  
 Jan must3SgPres wantINF beginINF readINF thatAcc bookAcc  
 ‘Jan must want to begin to read that book.’

- b.  ${}_{VP} [V^{\circ} {}_{VP} [\{ {}_{vc} V^{\circ} \dots V^{\circ} \dots \} V^{\circ}_{lex} DP]]$



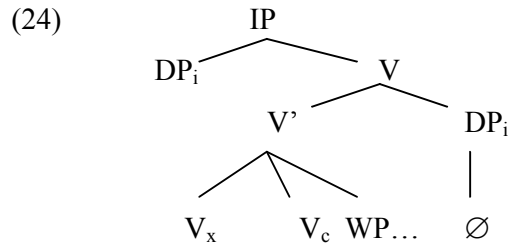
(23b) and (23c) are representations of (23a). There are several benefits in having the structure above. It ensures that the modal CVD is derived as a vP with the main semi-lexical verb (i.e. that agreeing with the subject and assigning it a  $\theta$ -role), *muset* ‘must’ is in the head of vP. Furthermore,  $v^o$  has a single, infinitival VP complement (*začít chtít číst tu knihu*) with inner flat structure that enables *začít* ‘begin’ and *chtít* ‘want’ to exchange freely their positions, whereas the lexical *číst* ‘read’ stays right to assign a  $\theta$ -role to the object *tu knihu* ‘that book’.

Since the flat structures are no longer the standard representation in syntax, let me outline the main arguments in their favour and clarify why the disadvantages resulting from the rejection of binary branching are, in our case, minor.

#### 6.6.1. Motives for the flat VP complement and the alternative

Although it would seem that the “marriage” between Chomskyan vP projection and the flat structure hypothesis is a strange one, it fits well with the explanation of how Czech modal structures are derived. It is obvious from the history of involvement of flat structures in generative syntax that they have been motivated precisely by the existence of multiple V derivations across languages. Even though binary branching has become a norm, flat structures are recently advocated in (Emonds 2001: 43) to explain syntactic constructions (prepositional, nominal and verbal) that lack the canonical behaviour of phrasal embedding.

Previously, Emonds (1999b) has argued that flat structures are necessary for the restructuring verbal domains in Romance (Rizzi 1978), which yields complex predicates. He proposes the following analysis of restructuring verbs (Emonds 1999b: 231):



The existence of flat V+V structures is predicted by two crucial principles, Late Insertion and Economy (Emonds 2000: 208-72, 2001). The former requires that all semi-lexical heads are inserted into the derivation as late as possible, whilst the latter relates to the economy of phrasal projections.

Both principles are applicable to the situation of semi-lexical verbs in Czech. Although Czech semi-lexical heads do not lack semantic features completely as Emonds suggests<sup>148</sup>, it follows from our theory that they are inserted into the derivation fairly late in comparison with the full lexical verbs. To sum up the role of the flat structure in the derivation of semi-lexical categories, I adopt the following final principle:

- (25) Semi-lexical heads extend a projection if and only if some principle of grammar requires the extension (Emonds 2001: 57)

I propose that (25) explains both vP projection and the flat VP projection in a single Czech CVD. The finite semi-lexical head  $v^\circ$  expands the VP projection because TMVs (and OMVs and AVs when occupying  $v^\circ$  position) are required in grammar to access AGR and Tense features and assign subject  $\theta$ -roles. On the other hand, the subsequent infinitival semi-lexical heads within the VP complement of  $v^\circ$  do not

<sup>148</sup> This was discussed in chapter 5.

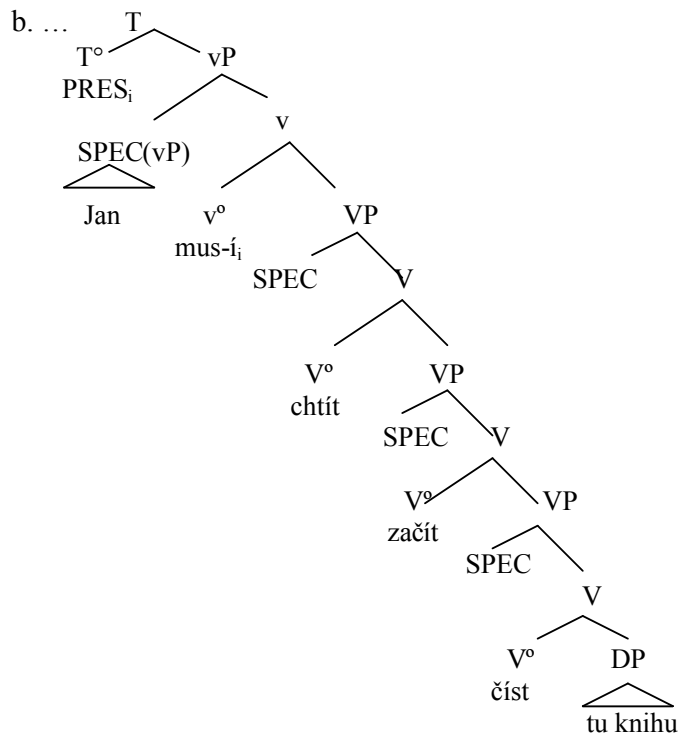


require multiple individual VP projections. According to the rule (25), there is therefore no reason to maintain binary branching other than structural uniformity. The structural uniformity alone, however, is not enough to prefer a ‘transparent’ binary system to the more adequate combination of the binary and flat structure.

Next to the assumption that semi-lexical infinitives in the modal CVDs in Czech are not required by grammar to extend phrasal projections, there are three additional arguments in favour of the flat structure in (23).

The first concerns economy of structure representation. To maintain the binary system, the alternative solution would have to involve a Cinque (1999)-style ‘super tree’ structure:

- (26) a. Jan mus<sup>í</sup> (TMV) cht<sup>ít</sup> (OMV) zač<sup>ít</sup> (AV) č<sup>íst</sup> (LV) tu knihu.  
 Jan must3SgPres wantINF beginINF readINF thatAcc bookAcc  
 ‘Jan must begin to want to read that book.’



In (26), each infinitival verb (semi-lexical *chtít* ‘want’ and *začít* ‘begin’ and lexical *číst* ‘read’) requires an individual phrasal projection. The difficulty with this approach is that it involves multiple VPs with empty Spec positions: there are no small-clauses or PRO categories that would merit the complexity of (26). Hence the structure above has to be questioned as less parsimonious than (23).

The second argument employs the process of  $\theta$ -role assignment in modal CVDs. One of the reasons for adopting the vP projection was that it explained the joint  $\theta$ -role assignment in the CVD as a result of the specific syntactic configuration (Hale & Keyser 1993, 1997). The advantage of the structure in (23) is that it illustrates a clearly defined  $\theta$ -grid of the complex predicate, where the semi-lexical head  $v^0$  is responsible for a subject  $\theta$ -role and the lexical head  $V^0$  assigns an object  $\theta$ -role. Crucially, unlike in (26), there are no intermediate projections between the ‘subject’  $v^0$  and the ‘object’  $V^0$  without any effect on the  $\theta$ -grid. Consequently, we have to argue that the structure in (26) cannot satisfactorily explain how the joint  $\theta$ -role assignment is achieved.

The third and final argument is related to the fact, observed in Czech data in the course of the investigation, that the members of the flat VP have different syntactic status. Whilst the lexical infinitive, to assign its  $\theta$ -role, has to have access to the object DP by being in the rightmost position in the CVD structure, the semi-lexical VP participants can exchange positions with each other or be dropped from the structure entirely. The former option is illustrated in (27a-b), whereas the latter is in (27c):

- (27) a. Jan musí (TMV) začít (AV) chtít (OMV) číst (LV) tu knihu.  
 Jan must3SgPres beginINF wantINF readINF thatAcc bookAcc  
 ‘Jan must begin to want to read that book.’
- b. Jan musí (TMV) chtít (OMV) začít (AV) číst (LV) tu knihu.  
 Jan must3SgPres beginINF wantINF readINF thatAcc bookAcc  
 ‘Jan must begin to want to read that book.’
- c. Jan musí (TMV) číst (LV) tu knihu.  
 Jan must3SgPres readINF thatAcc bookAcc  
 ‘Jan must read that book.’

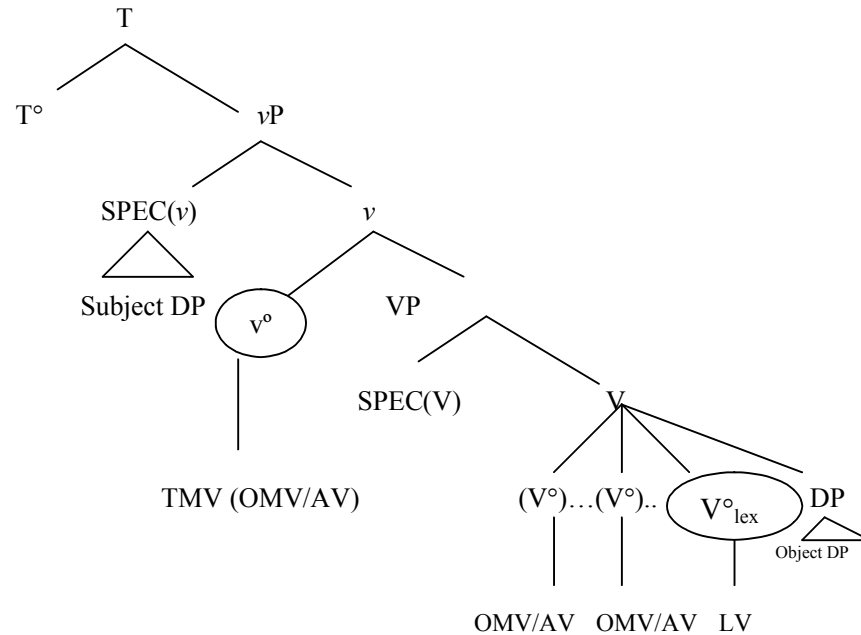
The argument here is that the flat structure in (23) is able to provide a more adequate explanation of the optional character of the semi-lexical infinitives *chtít* and *začít* above and a lesser degree of restrictions they are subjected to in terms of where they can appear in modal CVDs. The large binary tree in (26), on the other hand, cannot distinguish between individual VPs, neither it can account for their partially free ordering. Another question that the strictly binary branching structure has to answer is whether (26) is a universal representation of modal CVDs. If that were the case, the data above would always have to be represented by the super tree in (26), with some empty intermediate phrasal projections to account for (27c).

## 6.7. Summary and conclusion

I have argued in this chapter that the modal CVD structure is derived as a vP projection with a finite modal verb inserted into v°. Having incorporated the concept of flat structures into the theory, I have suggested that modals in v° can select an

infinitival VP complement with inner flat structure, and argued for the following unified representation of both simple and large modal CVDs:

(28) Final structure for Czech modal CVDs



In (28), TMVs are only inserted in the head of vP and full lexical verbs can occupy only the position of the rightmost lexical head in the flat VP projection. OMVs and AVs can either assume the role of TMVs in  $v^\circ$ , or be part of the infinitival cluster in the flat VP. The heads that are encircled are able to assign  $\theta$ -roles to their arguments. A major benefit of the tree above is that it yields only one VP projection in accordance with the monoclausal approach to the CVD structure in Czech.

This approach is specific in that it discards any expanded projections of the semi-lexical Vs in the flat VP. It can be argued that since modal and aspectual heads in the VP in (28) are infinitives, they must also have empty I – a position widely assumed (Wurmbrand 2001). Such a position, if included in the theory, would remain

empty in (28).<sup>149</sup> However, to involve additional empty structural positions in the syntactic system presented here is not necessary and would go against the principles of parsimony and clarity set out as our goal.

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<sup>149</sup> The empty I° has recently been suggested as a result of ‘upward selection’ of modals in silent ‘go’ constructions in West Germanic (van Riemsdijk 2002).

## Chapter 7

### *A semantic account of Czech modals*

## 7.1. Introduction: the modal meaning in historical perspective

It has been established earlier that Czech modals are semi-lexical verbs that retain a semantic feature *+mod* next to the cognitive syntactic feature +MODAL. I have argued in chapter 5 that *+mod* is an important part of the modal lexical entry and that it specifies the inherent semantic properties of modals, i.e. their ‘modal meaning.’ The existence of modal meaning distinguishes TMVs and OMVs from aspectual verbs in Czech, and to explain the semantics of Czech modals coherently within the used syntactic framework has been determined as one of the requirements of our theory of modality.<sup>150</sup>

This chapter investigates what characteristics of Czech modal verbs are specified by *+mod* feature. I will first briefly introduce the modal semantics in this section and then adopt Kratzer’s (1981, 1991) unified semantic theory of modality that account for both epistemic and root interpretations (7.2.). The distinction between root and epistemic is, inevitably, an important topic of modal semantics. This chapter will conclude by showing how it is realized by the *+mod* feature on the background of Kratzer’s unified theory (7.3., 7.4.).<sup>151</sup>

There are some important questions regarding modal meaning. The semantic interpretation of modal expressions has been at the centre of interest since Lyons (1977). This has been caused to some extent by the interaction of modal relations conveyed by language with modality issues related to different disciplines, such as logic and philosophy (Hintikka 1962, 1969; Davidson 1967; Kripke 1972; Chierchia 1995; Grisholm 2002). This situation is hardly surprising when we consider the fact that language modality, together with temporal relations, is part of much more

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<sup>150</sup> See chapter 1, the example (16).

<sup>151</sup> The remaining chapters 8-10 then analyse how and when both readings are derived in the vP.

complex phenomenon of modality and time/change perception in general, involving such prominent notions of contemporary formal logic as *possible worlds*, *time relations*, *individuals and events* etc.<sup>152</sup>

Apart from the semantic complexity of the modal interactions in languages that led to the use of formal logic frameworks, the problem with the semantic analysis of modal verbs is that they are ambiguous in their behaviour. This ambiguity is presented in practically all languages that involve modal verbs.

Since Lyons (1977) and Palmer (1986), every semantic theory dealing with modality, especially in English, gives a great deal of attention to the root v. epistemic dichotomy. The most important works are those of Kratzer (1981, 1991), Brennan (1993, 1997) and Barbiers (1995).

An important observation about the interaction between semantics and pragmatics in the analysis of modal behaviour has been made by Papafragou (2000), who offers an alternative to the mainstream logical framework. Similarly, Bhatt (1999) points out some questions unanswerable by the formal semantics theory of modality. The contemporary theories dealing with semantic aspects of modal verbs include von Stechow & Iatridou (2003) and Hacquard (2006). Von Stechow & Iatridou (2005) offers a summary of the current discussion, whilst other works look at modality as part of the wider notion of a speech act (Drubig 2001).

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<sup>152</sup> We can see how much the whole issue is unavoidably intertwined with the number of basic philosophical questions considering the researchers' grasp of the concepts such as *possible worlds* and *individuals* in relation to the role they play for our identification of modality and modal verbs.

Thus Grisholm (2002) for instance represents the current of modern philosophers that in a way undermines the basic assumption of the event semantics: the individual's/event's ability to remain unchanged throughout the quantification over possible worlds. He argues that the only way to countenance identity through possible worlds is to accept that individual things have essential properties. However, it is extremely difficult to find out what those properties are. This has in turn an impact on the *event identification principle* employed for the analysis of modal behaviour in language by Hacquard (2006: 57-60) as a follow up from Davidson (1967) and others. It seems to be very hard to identify precisely which property of an event is essential (Hacquard 2006: 60). Therefore, it is difficult to establish some formal principles on the basis of which, as we will see later on, the modal interaction in language works.



## 7.2. Modal auxiliaries, quantification and context-dependency

Czech modal verbs are specified within syntax by their subcategorization frame. The important factor of this specification is that they behave in an identical way throughout the derivation process, regardless of their semantic ambiguity in terms of root/epistemic interpretation. Hence, I propose that the particular modal interpretations do not alter the syntactic structure that modal verbs enter. Instead, the processes of root v. epistemic disambiguation are delegated to the level of Logical form (LF).

This assumption is not self-evident. As we will see later, there are theories that equally accentuate all levels of language representation as responsible for the disambiguation. Our hypothesis will have to assure that there is enough evidence for the LF hypothesis on both syntactic and semantic grounds. Concerning syntax, such evidence is grounded in the previous introduction of the vP projection, which will become crucial for the modal disambiguation later on in chapter 10. The semantic evidence, on the other hand, is provided by Kratzer's (1981, 1991) framework. The following subsections will analyse the development of the unified theory of modality on the background of the crucial semantic notion of 'possible worlds'.

### 7.2.1. Modality and possible worlds

Hacquard (2006: 11) reiterates the intrinsic semantic observation about modality in languages: the modals are elements of the language with the ability to go beyond directly observable facts, and this ability lies at the heart of the modal meaning. Manifestations of the modal meaning are, therefore, formally captured by

the notion of *possible worlds*, introduced to linguistics by Kripke (1963), Lewis (1968, 1973) and others, and further developed in Kratzer (1981, 1991).

Within the system of possible worlds, modal auxiliaries are understood to quantify over different sets of worlds in the same way *some* or *every* quantify over sets of individuals. Let us see how this work on the following set of simple modal CVDs.

- (1) Jan musí číst tu knihu.  
Jan must3Sg readINF thatAcc bookAcc  
'Jan must read that book.'

The modal meaning that can be inferred from (1) is that in all accessible worlds among a certain set of worlds, Jan reads a particular book. If we assume that the modal in question entails necessity, the necessity part of the meaning is achieved by the fact that the sentence is universally quantified, i.e. it is true in all worlds within the given set (Hacquard 2006: 11). The difficult question is how to determine the set of worlds that is relevant for the quantification. Regarding (1), such a set would be defined by all possible worlds in which Jan's activity involves reading a particular book to comply with certain rules.

Whilst necessity entails *total quantification*, possibility is characteristic for a *partial quantification*. Possibility meaning is obtained when the modal quantifies over some of the accessible worlds instead of all of them:

- (2) Jan může číst tu knihu.  
Jan may3Sg readINF thatAcc bookAcc  
'Jan may read that book.'

The modal ‘may’ in the above sentence behaves like a partial quantifier. It conveys the meaning that there is at least one world within the set of the accessible worlds in which Jan reads a particular book and still complies with certain rules.

Although the application of the logical concept of possible worlds in the modal interpretation seems straightforward enough, it is not entirely without complications. There is the notion of *actual* (experienced) *world*, and its relation to the sum of worlds accessed by the modal. It remains to be determined whether modal semantics should concern itself with the difference between the concepts of actual world and possible worlds. In other words, is the difference relevant for the interpretation of modals?

Going back to the examples (1) and (2), it has been pointed out that the actual world in this case is not a part of the sum of all possible worlds accessible by the modals *muſet* ‘must’ and *moci* ‘may’. Jan, in reality, can never read the book, or can never be enabled (allowed) to read it. Hence the modal semantics appears to exclude the actual world and stipulate that modals in general enable us to talk about non-actual possible situations by invoking worlds other than the actual one (Hacquard 2006: 12).

There are, however, cases that bring this assumption into question. The actual world can in fact be amongst the worlds accessed by the modal. In this case, the relation between modals and the accessed worlds that are quantified over is *reflexive*. This is typical for epistemic modality. The specific character of epistemic modals allows them to evaluate the actual world on the set of accessible worlds that includes the actual world itself (Hacquard 2006: 12):

(3) In view of the evidence, Jane may be the murderer.

The epistemic ‘may’ in (3) specifically takes into consideration the actual world, in which the evidence has been gathered, among other possible worlds that it quantifies over.<sup>153</sup>

In general, while the theory involving quantification over possible worlds is a good start, some additional modifications are necessary in order to determine the exact semantic status of ‘modal meaning’.

### 7.2.2. Preparing the ground: Brennan’s proposal

Brennan (1993, 1997) can be seen as a theoretical bridge between the traditional views that understand the differences in modal interpretation as the differences between types of modal predicates, and approaches arguing for the differentiation less relevant for the sentence structure. She modifies the influential premise that epistemic modals are one-place predicates whereas root modals have the status of two-place predicates (Palmer 1979) by assuming instead that modals in general are semantic *operators*. This approach emphasizes different scope properties as the main factor distinguishing between modal interpretations.

In Brennan’s system, root modals scope over a lesser domain, their immediate verbal complement, and thus are sometimes called VP-modals. Their lower scope reach allows them to be identified as *predicate operators*. Epistemic modals, on the other hand, can scope over a much larger domain of the whole sentence (proposition), and hence become *propositional operators*.

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<sup>153</sup> It does not mean, however, that the statement has to be true in the actual world. (3) is true if at least one possible world accessed by the epistemic ‘may’ agrees with the evidence. Obviously, this possible world could turn out not to be the actual world. As Hacquard points out, the statement *Jane may be the murderer and Elisabeth may be the murderer* is not a logical contradiction. Both possible worlds in which Jane is the murderer and Elisabeth is the murderer can be compatible with the same evidence given. The actual world then could prove to be either one of them, or neither of them.

The difference between predicate and propositional status is well illustrated in the case of the symmetrical relation pattern below:

- (4) a. Arthur looks like Susan  $\div$  Susan looks like Arthur
- b. Arthur must/might look like Susan  $\div$  Susan must/might look like Arthur  
EPISTEMIC
- c. Arthur must/might look like Susan  $*\div$  Susan must/might look like Arthur  
ROOT

(Brennan 1997: 190)

(4) involves the relation  $R(x,y) \div R(y,x)$  as represented in English by the commutative ‘with’, ‘shake hands with’ or ‘walk with’, and the equivalence ‘be as tall as’ or ‘look like’. These predicates denote a symmetrical relation. However, if they also contain a modal, the relation remains valid only under the epistemic interpretation of the modal. If the first proposition in (4b) is true, also the second one has to be true. The root reading of the modal in (4c) above, on the other hand, blocks the  $R(x,y) \div R(y,x)$  pattern. The truth of the first proposition in (4c) does not imply the truth of the reversed proposition in (4c). Interestingly, the implication in (4b) is as strong as the one in (4a), even though (4a) states that Arthur looks like Susan as a fact, whereas (4b) complicates the truth conditions of the statement by the use of the modal.<sup>154</sup>

Brennan (1997) explains the difference in (4) by pointing out that an epistemic modal, being a propositional operator, should not be able to affect the way in which predicate and argument combine, since they have already been combined before the effect of the propositional operator takes place. In contrast, root modals as predicate

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<sup>154</sup> The meaning of a modal operator cannot be captured within the basic truth-conditional logic treating TRUE and FALSE as a binary opposition. Instead, special modal logics have been designed to extend the classical logic systems by the application of possible worlds. If a statement *is* true it is true in all possible worlds. If a statement *must* be true it is true in all possible worlds accessed by the modal.

operators affect the nature of a predicate by definition, causing the change in the symmetrical pattern.

It is important to see Brennan's observation in the wider context of what propositionality means, especially in its relation to the predicate. Brennan assumes that the propositions are always larger than predicates. However, recent developments in syntactic theory reveal this assumption to be fundamentally wrong. The term *proposition* does not necessarily have to refer to a syntactic element larger than predicate. For instance, Chomsky (1999, 2001) argues for the propositional character of vP and CP. It is not difficult to see CP as a proposition due to its identification with a sentence. Chomsky claims that vP has similar propositional status in nature, in the sense that vP has 'full argument structure' (Chomsky 2001: 21).

Such definition of propositionality is purely syntactic, as opposed to the traditional semantic definitions. However, it has far reaching semantic consequences. Butler (2003) first noticed how influential Chomsky's hypothesis could be for capturing different semantic behaviours of modal interpretational types. The idea is that modals can scope either over CP, or take a narrower scope over vP. The latter case is enabled by the fact that modals are able to scope immediately over any element that is propositional (Butler 2003: 13). Regarding the different modal interpretations in respect of a possible unified semantic theory for Czech modal verbs, the following principle can be suggested:

- (5) All modal verbs have to scope over propositions.

The principle in (5) assumes that modals, regardless of whether they take on root or epistemic meaning, semantically take only propositions for arguments. In

contrast to the earlier characteristics of what a proposition is in semantics (Brennan 1993, 1997), recent theories show that the notion of proposition can refer to units smaller than sentences. The advantage of this position is that it provides a unifying hypothesis represented in (5) above, claiming that even though root modals do not take the whole sentence as a ‘complement’ in the traditional sense, they still scope over a (non-sentential) proposition, vP.

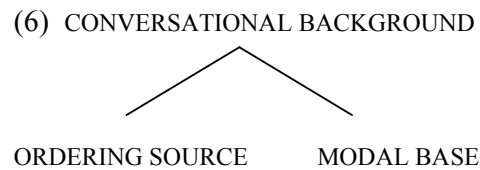
Butler (2003) demonstrates that there are two discrete positions for modals to be interpreted at LF, one immediately above vP, and one immediately above CP. The exact status of processes by which Czech modals attain these LF positions to distinguish between root and epistemic interpretation are analyzed in chapter 10. For now, it is important to note that the understanding of all modal verbs as propositional operators is an important step towards the unified semantic theory that will be proposed later in 7.3. The following section analyzes Kratzer’s (1981, 1991) characterization of modals as propositional operators quantifying over possible worlds and demonstrates the main principles of Kratzer’s system that will be adopted into the theory of modal meaning in Czech.

### 7.2.3. Modal base and ordering source: Kratzer’s semantic theory

One of the most important conclusions of the semantic theory regarding the modal meaning is that the different interpretations of modal verbs share a semantic core. Kratzer (1981, 1991) argues that the differences in modal interpretation can be accounted for by a combination of contextual and structural factors. For instance, root v. epistemic dichotomy is the outcome of context-dependency, not the case of

polysemy. Modal expressions share a basic, rather skeletal meaning and it is only in combination with the background context that they take on a particular meaning.

The function of modal verbs is to quantify over possible worlds. The process of quantification is restricted by a *conversational background*, which is defined by two formal parameters: *modal base* (M) and *ordering source* (O) (Kratzer 1991):



Modal base is identical with the set of relevant possible worlds. Every time a specific modal verb is interpreted in the structure, the set of the possible worlds changes. Different constraints on the modal base distinguish between root and epistemic interpretation. Hence the modal base is more expanded in the case of epistemic modality and less expanded in the case of root modality. When a modal is interpreted as epistemic, a broader modal base is taken into consideration, related not only to the clearly evident facts. When it has the root reading, the modal base is circumscribed by the limited number of facts that we are certain are correct for the situation in question (Kratzer 1991: 645-6).

If the modal base is a variable, the second parameter of the modal relation, ordering source, has the function of a constant. It represents a concept of an ‘ideal’ or ‘basic’ world in relation to which all other worlds within a valid modal base are considered. The ordering source imposes the partial order of the worlds under consideration with respect to their closeness to the ideal world: some are equal to the



ideal, some are ordered on the scale with greater or lesser degrees of similarity.

Kratzer's (1991) modal semantic framework can be formalized as follows:

(7) *Kratzer's basic definition for modal sentences*

For any sentence  $p$ , world  $w$ , modal base  $M$ , and ordering source  $O$ :

- a. 'It must be that  $p$ ' is true in  $w$  relative to  $M$  and  $O$  iff  
 $p$  is true in all the worlds closest (by  $O$ ) to  $w$  within  $M$ .
- b. 'It can be that  $p$ ' is true in  $w$  relative to  $M$  and  $O$  iff  
 $p$  is true in at least one of the worlds closest (by  $O$ ) to  $w$  within  $M$ .

(7) can account for the behaviour of both epistemic and root modality. The difference between modal interpretations is explicable by the restrictions on the modal base. The modal base is *epistemically restricted* if what is known in  $w$  is true in all worlds in  $w$ 's modal base. In this case, we get the epistemic reading of the modal. On the other hand, the modal base can also be *circumstantially restricted*, which means that some relevant truths of  $w$  are true across worlds in  $w$ 's modal base. Circumstantial restriction on the modal base will create root readings. Therefore, the modal meaning is a result of the interaction of the two parameters ( $O$ ,  $M$ ) towards a given world  $w$ .

This interaction can explain also the differences of meaning found within the epistemic and root readings. Let us consider Czech *muŝet* 'must' and conditional *mít* 'should'. Both modals are semantically different in the strength of the 'necessity' interpretation.<sup>155</sup> *Muŝet* 'must' involves a strong necessity and that is why the evaluated worlds (comprising the modal base) are those that are established by the ordering source to be very similar to the ideal world. The modal *mít* 'should' in the

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<sup>155</sup> This fact was observed also in Butler (2006: 11) for English *must* and *should*.

conditional contexts, on the other hand, implies a weak necessity, which allows also for the evaluation of worlds less similar (by ordering source) to the ideal world. The difference has important grammatical consequences as demonstrated in (8) below:

- (8) a. (\*Není to nutné ale) musíš být doma v pět  
 NEGis3sg it necessary but must2Sg beInf home in five  
 ‘It is not necessary but you must be at home at five o’clock.’
- b. (Není to nutné ale) měl bys být doma v pět  
 NEGis3sg it necessary but havePast Aux2Sg beInf home in five  
 ‘It is not necessary but you should be at home at five o’clock.’

The necessity reading can be broken by adding the bracketed material in (8b) because it involves a weak necessity. The similar result is not achieved in (8a); it is not possible to say that the necessity actually does not hold, because (8a) contains a strong necessity. The data in (8) show that the character of the ordering source v. modal base relation differs according to the modal input. However, the proposition remains the same, and so therefore does the set of the worlds it denotes (i.e. worlds in which ‘you are at home at five o’clock’).

The combination of the possible world theory and the assumption that modal verbs behave semantically as propositional operators is the basis for the delimitation of the modal meaning in Czech. So far in this chapter, I have shown that modal semantics has always dealt with the root v. epistemic dichotomy, and that the incorporation of the notion of ‘possible worlds’ from logic and philosophy helped to ascertain different semantic behaviour of modals under the root and epistemic interpretation respectively. Furthermore, we have noticed the replacement of the assumption that only epistemic modals scope over propositions (Brennan 1993, 1997)

by a more universal concept of modal verbs in general as propositional quantifiers (Butler 2003, original idea presented in Kratzer 1981, 1991). The main arguments are summarized in the following section that also contains the analysis of the modal meaning in Czech CVDs in light of the aforementioned development of modal semantics.

### 7.3. The proposal of the unified semantic theory for *+mod* in Czech

The unified semantic approach, as seen so far, does not merely cover the differences between the main interpretational types of modal verbs – root and epistemic – by offering an elegant solution to their disambiguation. It is also able to explain varieties of meaning within these types themselves, such as the epistemic variation between stronger and weaker necessity created by the contrast between *muset* ‘must’ and the conditional *mít* ‘should’.

I suggest that on the basis of Kratzer’s analysis, there are in fact two mechanisms of the modal relation that is the interaction between ordering source and modal base. Although they are not contrasting, they differ according to what kind of modal meaning is achieved. The role of the first mechanism is to disambiguate modal verbs with relation to their epistemic v. root readings. The second mechanism does not disambiguate; its role is to explain the degrees of modal meaning assigned traditionally to such notions as ‘necessity’, ‘probability’ etc.

The epistemic v. root disambiguation is the outcome of expansion or restriction processes on the modal base. Every time we switch from the root interpretation to the epistemic one, we tend to evaluate a larger set of relevant worlds than we did previously when the modal had a root reading. This principle applies

universally in all languages that are able to convey modal meaning and is evident in the simple Czech modal structures:

- (9) Jan musí už být v posteli.  
Jan must3Sg already beInf in bed  
'Jan must already be in bed.'

The modal in (9) is ambiguous, having both epistemic and root meaning. There are different ways of disambiguating (9). We have seen that the more conventional way (Brennan 1997) is to suggest that only the epistemic modal scopes over the proposition. Epistemic *muset* 'must' moves to the left, higher position, to take a proposition as its argument. According to the traditional view, root modals cannot reach the sentential position. This is demonstrated in (10) below:

(10) Brennan's account

- a. MUST [*Jan je už v posteli* 'Jan is already in bed']. E interpretation
- b. [*Jan*] MUST [*už být v posteli* 'already be in bed'] R interpretation

The unifying theory, on the other hand, allows both modal types to scope over propositions. The disambiguation is achieved by the assumption of different modal bases. If *muset* 'must' in (10) is root, it evaluates (quantifies over) a substantially restricted set of worlds identified as worlds in which Jan is obliged to be in bed by a certain time. In contrast, epistemic *muset* 'must' takes a much larger set of worlds in the evaluation process. Its modal base is identical with all possible worlds in which, given the evidence we have, Jan is at the moment in bed. In both cases, the modal base does not have to include the actual world (the sentence in (9) does not say

whether Jan is actually in bed). However, it has to include an ‘ideal world’  $w$  according to which ordering source (O) works. Hence, we get the situation in (11):

(11) Kratzer’s account

In  $w$  relative to Modal base  $M$  and Ordering source  $O$

*It must be that* [Jan je už v posteli ‘Jan is already in bed’]

$M_{ep} > M_{root}$

Among other benefits, (11) addresses the fact that both modal readings of *muset* ‘must’ induce a ‘strong necessity’. We can say that it is necessary that Jan is in bed whether he is ordered to be in bed by his parents or it is believed that he is in bed as a fact. Crucially, the explanation in (10) was not able to specify other attributes of the modal meaning than root and epistemic dichotomy. Hence Kratzer’s approach has more explanatory power.

The second mechanism of the modal relation is not set to disambiguate. Instead, it helps us to understand the degrees of modal meaning resulting from the semantics of individual modal verbs in Czech, such as *muset* ‘must’ and *moci* ‘can’. This time, it operates by comparing the modal base, which remains the same, with the ideal world  $w$ . The interpretation of the difference between *Jan musí být v posteli* ‘Jan has to be in bed’ and *Jan může být v posteli* ‘Jan can be in bed’ by this mechanism proceeds as follows:

(12) In  $w$  relative to  $M$  by  $O$

a. *It must be that* [Jan je v posteli ‘Jan is in bed’]

$\Rightarrow w \cong M$

b. *It can be that* [Jan je v posteli ‘Jan is in bed’]

$\Rightarrow w \neq M$

(12) captures the fact that the semantics of *muset* ‘must’ inherently implies that all possible worlds in modal base M are very similar or ‘close’ to the ideal world w. On the other hand, the semantics of *moci* ‘can’ allows some worlds within the modal base to be different from w. I suggest that the mechanism in (12) is universal for all modal relations: necessity arises when M is either equal or very close to w, and does not occur when  $M \neq w$ . This means that all degrees of modal meaning can be created by relating w to M.

### 7.3.1. +/- NECESSITY and +/- EPISTEMIC as the feature sub-components of the modal meaning

The assumption that either (12a) or (12b) above is universally applicable to all Czech modals has one interesting consequence. If the individual modal verbs in Czech share semantic processes that compare w to M, would it not be possible to break their meanings into a basic common element, characterized as ‘necessity’? Such a proposal would look as follows:

#### (13) The modal meaning carries the +/- NECESSITY feature

Suppose that ‘necessity’ plays an important part in distinguishing between *Jan musí být v posteli* ‘Jan must be in bed’ and *Jan může být v posteli* ‘Jan can be in bed’. This assumption is feasible given the grammaticality issue that has been observed above in (8). Moreover, we have established the difference between individual degrees of modality as a result of the modal relation (i.e. quantification of modals over sets of possible worlds), on the same level as root v. epistemic dichotomy. Both mechanisms, therefore, appear to be a part of the semantic  $f^{\wedge}$  feature *+mod.*

According to the premise in (13), the difference between Czech *muset* ‘must’ and *moci* ‘can’, for instance, would be caused by the presence of the distinctive feature +/- NECESSITY that becomes a component of the inherent semantic feature *+mod*. Consequently, all Czech modals would have either +NECESSITY (TMVs *muset* ‘must’ and non-conditional *mít* ‘have to’<sup>156</sup>) or –NECESSITY (TMVs *moci* ‘can’, conditional *mít* ‘should’<sup>157</sup>, *smět* ‘be allowed’ and all OMVs).

The second feature component of *+mod*, this time responsible for modal disambiguation, is +/- EPISTEMIC. The proposition that modal structures can obtain epistemic interpretation has been inherently discussed within modal semantics and, as shown above, led to the understanding of all modals as quantifiers. In our semantic system, +/- EPISTEMIC functions as an additional feature: the Czech modal verb *muset* ‘must’ can express both ‘root necessity’ and ‘epistemic necessity’ in the simple vP *Jan musí už být doma* ‘Jan must be already at home’. The former is achieved when Jan is required/ obliged to be at home, whilst the latter represents the situation when the speaker is sure that Jan is at home. Since the root interpretation is obligatory in all Czech modals (there are no ‘purely epistemic’ modal verbs in Czech),<sup>158</sup> the role of

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<sup>156</sup> The non-conditional use of *mít* ‘have to’ is represented below:

- (i) Jan *má* psát tu zprávu. +NECESSITY  
 Jan have3Sg writeInf thatAcc reportAcc  
 ‘Jan has to write the report.’

<sup>157</sup> The conditional use of *mít* ‘should’ looks as follows:

- (i) Jan *by měl* psát tu zprávu. -NECESSITY  
 Jan AuxCon have3SgPast writeInf thatAcc reportAcc  
 ‘Jan should write the report.’

<sup>158</sup> To complete the symmetry, it can be argued that if the basis of epistemic interpretation is the (obligatory) root interpretation, the basis for ‘necessity’ is ‘probability’. In other words, ‘probability’ is subsumed within ‘necessity’ as a semantic attribute that all modals have.

- (i) Jan *má* psát tu zprávu.  
 Jan have3Sg writeInf thatAcc reportAcc  
 ‘Jan has to write the report.’

+/- EPISTEMIC is to distinguish between ambiguous TMVs (*muset* ‘must’, *mít* ‘have to’ and *moci* ‘can’) that can have both root and epistemic interpretations and other modal verbs. As already noted in chapter 4, OMVs are not able to attain epistemic interpretation.

Therefore, the modal semantic system has the following character: all Czech modals involve the inherent semantic feature *+mod* in their lexical entry, which specify that they are semi-lexical verbs with modal meaning. Furthermore, *+mod* contains two sub-components based on the way modals quantify over sets of possible worlds. These subcomponents specify either positively or negatively defined abilities to express ‘necessity’ (+/- NECESSITY) and attain epistemic interpretation (+/- EPISTEMIC). Whilst *+mod* was introduced as a non-distinctive feature in chapter 5, both +/- NECESSITY and +/- EPISTEMIC are distinctive. The application of both features in Czech yields the combinations in (14) below (the relevant modals are in *italic*):

(14) a. [+NECESSITY, +EPISTEMIC] – *muset* ‘must’, *mít* ‘have to’

Jan *musí* / *měl* být doma.  
 Jan must3Sg/have3SgPast<sup>159</sup> beInf home  
 ‘Jan must/ had to be at home.’

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The modal *mít* ‘have to’ above has +NECESSITY, but it also includes ‘probability’ – if it is necessary that Jan is writing the report, it is also probable that he is writing it. The principle does not apply vice versa. Although the sentence *Jan může psát tu zprávu* ‘Jan can write that report’ involves ‘probability’, it does not express ‘necessity’. These are the reasons we are not talking about either +/- ROOT or +/- PROBABILITY. They do not have a distinctive character in our semantic system.

<sup>159</sup> The past tense is used here because Czech *mít* ‘have to’ has a clear epistemic interpretation only when it is in the past tense, such as in the ‘news read’ sentence below:

(i) Jan *měl* minulý týden vyloupit tři banky.  
 Jan have3SgPast last week rob three banksAcc  
 ‘Jan had to rob three banks last week.’ (= he robbed three banks last week)



- b. [+NECESSITY, -EPISTEMIC] – *dovolit si* ‘dare’, and *hodlat* ‘intend’

Jan *si dovolil/ hodlá být doma.*

Jan Refl dare3SgPast/ intend3Sg beInf home.

‘Jan dares/ intends to be at home.’

- c. [-NECESSITY, +EPISTEMIC] – *moci* ‘can’, *mít* ‘should’

Jan *může/ by měl být doma.*

Jan must3Sg/AuxCon have3SgPast beInf home.

‘Jan can/ should be at home.’

- d. [-NECESSITY, -EPISTEMIC] – *smět* ‘be allowed’, *chtít* ‘want’, *umět* ‘be able’

Jan *smí/ chce/ umí být doma.*

Jan allow3Sg/ want3Sg able3Sg beInf home

‘Jan is allowed/ wants/ is able to be at home.’

Whilst the system in (14) above probably needs further testing, it is useful since it provides the means to universally delimitate the *+mod* feature that has been stipulated by the modal lexical entry (chapter 5).

The discussion so far helped us to uncover some relevant characteristics of  $f^{\wedge}$  feature. We can see that, for instance,  $f^{\wedge}$  is not semantically vague. It involves the feature system set up in (14) above. In terms of the unified semantic theory,  $f^{\wedge}$  is also responsible for the relation between the modal base M and the ordering source O.

The introduction of the unified semantic account of modal verbs into Czech modal structures has to be further tested on the grounds of a) difference between TMVs and OMVs, and b) the existence of multiple modals in the vP projection.

### 7.3.2. The multiple modal structures revisited: TMV v. OMV

Let us now concentrate on the fact that OMVs can have only root readings and then suggest a solution for the multiple modal structures. Recall that chapter 4 describes the inability of Czech OMVs to assume epistemic interpretation as one of the main semantic differences between OMVs and TMVs. Without repeating the discussion here, I suggest that it is due to their participation in the event structure of the complex predicate. It seems that it is easier for TMVs to take a larger modal base (or quantify over larger sets of possible worlds) because they cannot denote events at all. The ability of OMVs to denote partial events means that they are semantically more tied to the main predicate, which restricts their modal base.

However, this does not constitute a hindrance to our semantic system. The basic assumption of the system is that modal interpretation is created as a result of the four interacting factors: ideal world  $w$ , modal base  $M$ , ordering source  $O$  and proposition  $P$ . There is no reason why this should not hold for the OMVs as well. The only thing that has to be done is to modify (12) for Czech OMVs. For instance, consider the sentence in (15):

- (15) Jan   chce   už   být   v   posteli.  
Jan   want3Sg   already   beInf   in   bed  
'Jan already wants to be in bed.'

Similarly to Czech TMVs, OMVs also have the ability to access the sets of possible worlds. Hence, the modal relation encoded in the semantic of *chtít* 'want' involves the modal base that is restricted by all the possible worlds in which it is desirable for Jan

to be in bed. In the case of *chtít*, the modal base is stable – it can neither be expanded nor restricted. The formal representation is as follows:

- (16) In *w* relative to Modal base *M* and Ordering source *O*  
*It is desirable that* [Jan je už v posteli ‘Jan is already in bed’]

The existence of Czech multi modal structures gives further support to our semantic hypothesis. We have observed that TMVs can co-occur with OMVs to form larger CVD structures. The first rule of modal co-occurrence is that two types of TMVs can never appear in one sentence.<sup>160</sup> This rule gives us TMV-OMV or OMV-OMV structures, but never TMV-TMV structures. The second rule specifies the locality relations within the CVD, saying that an OMV can never precede a TMV (be inserted higher than TMV in the structure). This rules out OMV-TMV structures. The example of a well-formed sentence that contains multiple modals is (17) below.

- (17) Jan musí chtít být už v posteli.  
 Jan must3Sg wantInf beInf already in bed  
 ‘Jan must already want to be in bed.’

The sentence (17) is an example of TMV-OMV structure that contains a TMV *muset* ‘must’ and OMV *chtít* ‘want’. According to the rules of the modal co-occurrence, *muset* has to be inserted into the structure before *chtít*; the reversed structure would yield ungrammaticality, as represented in (18) below:

- (18) \*Jan chce muset být už v posteli.  
 Jan want3Sg mustInf beInf already in bed  
 (‘Jan already wants to must be in bed.’)

<sup>160</sup> See chapter 3 for the relevant data.

The sentence in (18) contains the OMV *chtít* ‘want’ preceding the TMV *muset* ‘must’. The grammaticality issue is created because the  $v^\circ$  position in the vP projection, which is the obligatory syntactic position for TMVs, is blocked by the OMV *chtít*. We have seen that whenever there is both a TMV and an OMV in the structure, the former has to occupy  $v^\circ$ . OMVs, on the other hand, can also be inserted in this position when there is no TMV present in the CVD structure.

Importantly, these observations can now be explained on semantic grounds. The unified semantic theory that has been proposed in the course of this chapter treats Czech modal verbs as propositional operators. They realize their inherent semantic features by quantifying over sets of possible worlds. To be able to do it, they need to assume scope positions on the edge of the two main propositional units – CP and vP. The exact character of these processes is further discussed in the remaining chapters of the thesis. In chapter 10, I will argue for the LF movement of modals occupying  $v^\circ$  position, outside vP in the case where they have –EPISTEMIC feature or outside CP if they are +EPISTEMIC.

We will see that the situation is further complicated in the case of double modal constructions. At this point, I suggest the hypothesis that the infinitival modals in the double modal structure do not move out of the flat VP complement of  $v^\circ$  to participate in the modal scope and their +/- EPISTEMIC feature is therefore inactive. This is evident in (17) above, which can have the epistemic reading [‘I’m certain that Jan already wants to be in bed’] next to the root one [‘Jan is already obliged to want to be in bed’], even though the second (infinitival) modal is the OMV *chtít* ‘want’ with the –EPISTEMIC feature. The grammaticality issue does not take place because the negatively defined –EPISTEMIC can be inactive in (17).

The situation in (18) is different. Note that the modal *muset* ‘must’ has a positively defined feature +EPISTEMIC. The reason why it renders the construction in (18) ungrammatical when inserted into the VP complement rather than to v<sup>o</sup> position is that it cannot move out of the VP to attain the epistemic interpretation. In this case, I suggest that +EPISTEMIC cannot be inactive without affecting grammaticality.

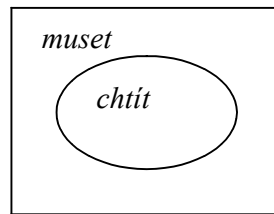
In general, modals that occupy the leftmost position (which is the head of vP) in the CVD structure can realize their semantic status as propositional operators and, crucially, have access to the epistemic meaning if they also contain +EPISTEMIC feature. This principle encompasses the reasons why the v<sup>o</sup> is a primary syntactic position for TMVs and why OMVs have to give precedence to TMVs regarding this position. Moreover, it also clarifies why there cannot be two TMVs in a single CVD structure competing for the v<sup>o</sup> position.

Both TMVs and OMVs contain a modal base M. The interesting fact is that M is either substantially expanded in the case of the epistemic readings of TMVs, or substantially reduced in the case of OMVs. Moreover, in accordance with what has been proposed above, the expansion of M is possible only in those modal verbs that are high in the structure in v<sup>o</sup>. The lower in the structure a modal is the fewer options it has for expanding its modal base, demonstrating why it is only a TMV that is responsible for the switch from epistemic to root readings. (19) summarizes the semantic hypothesis regarding the multiple modal constructions in Czech:

(19) For a given TMV-OMV (OMV-OMV) structure and the modal base  $M$

- a. The ‘final’  $M$  that is taken into consideration in the process of modal quantification is the result of expanding  $M$  of the infinitival OMV by  $M$  of the finite TMV/ OMV.
- b. Considering the well formed structure in (17) above,  $M$  of *chtít* ‘want’ is subsumed by  $M$  of *muset* ‘must’.

$M(\textit{muset}) \gg M(\textit{chtít})$



(19) specifies that only the final modal base can be further expanded to create the epistemic reading. The TMV is responsible for the epistemic interpretation. The external border of the diagram in (19b) represents the modal base of the whole multi modal structures such as the discussed TMV-OMV repeated here as (20).

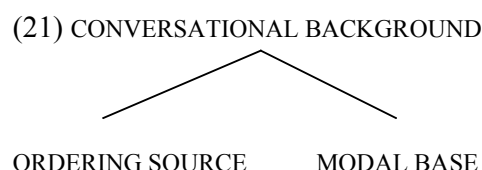
- (20) Jan    *musí*      *chtít*      *být*      *už*      *v*    *posteli*.  
 Jan must3Sg wantInf beInf already in bed  
 ‘Jan must already want to be in bed.’

The modal quantification in (20) takes first the whole set of possible worlds in which it is desirable for Jan to be in bed and then expands them by all the possible worlds in which it is required that Jan is in bed. Only the expansion operation generates the appropriate result, i.e. the set of possible worlds in which it is required for Jan to

desire to be in bed. The operation of a simple merging, for instance, could not explain why the TMV scopes over the OMV in (20) above.

#### 7.4. Summary and further issues

The most important premise of this chapter is that all Czech modals are semantically propositional operators. I have adopted Kratzer's modal semantic system that uses the theory of possible worlds as a starting point in the explanation of what is involved in the modal meaning (realized by the *+mod* feature). The structure of the modal system is represented as follows:



The figure in (21) illustrates the relation between the ordering source (O) and the modal base (M). The role of M is to determine the set of all relevant possible worlds quantified over by a modal operator, whereas O relates this set to the ‘ideal’ world (w), which may or may not be equivalent to the actual world where the discourse takes place. For instance, the proposition that the modal *muset* ‘must’ quantifies over is true in all the worlds closest (by O) to w within M.

I have argued that there are two principles participating in the modal meaning in relation to (21). The first one was identified as *epistemic v. root disambiguation*. I have adopted Kratzer's hypothesis that epistemic modality expands the modal base M, whereas root modality reduces it. When a speaker ascertains the truth conditions of a

proposition, he takes a larger M into consideration. When he states that something is required to happen, a lesser (restricted) M is considered. The epistemic v. root ambiguity is, therefore, disambiguated by virtue of restrictions on the modal base. The disambiguation process has been summarized in the following way:

(22) First principle

In w relative to Modal base M by Ordering source O

*It must be that* [Jan je už v posteli ‘Jan is already in bed’]

$M_{ep} > M_{root}$

(+/- EPISTEMIC)

We have noted that (22) needs to be further modified as suggested by Butler (2003), since it stipulates that both epistemic and root *muset* ‘must’ scope over the same proposition – the sentence *Jan je už v posteli* ‘Jan is already in bed’. I will argue in chapter 10 that although both epistemic and root modals scope over propositions, these are not syntactically the same, but CP in the case of the epistemic interpretation and vP in the case of the root reading of the modal. However, this fact does not affect the universal semantic principle in (22), which has led to the introduction of the feature +/- EPISTEMIC.

The second principle was introduced to determine the differences between the individual modal verbs in terms of their ability to express ‘necessity’. In this case, I have argued for (23):



(23) Second principle

In w relative to Modal base M by Ordering source O

a. *It must be that* [Jan je v posteli ‘Jan is in bed’]

$\Rightarrow w \cong M$

b. *It can be that* [Jan je v posteli ‘Jan is in bed’]

$\Rightarrow w \neq M$

(+/- NECESSITY)

I have proposed that all modal verbs in Czech are semantically characterized as either able to express necessity or lacking this ability. Similarly, some of them can attain epistemic interpretation and others have only obligatory root reading. The conclusive argument of the investigation was that the modal meaning (+*mod*) consists in the combination of the two principles above.

The analysis of the first principle in multiple modal constructions shed more light on the observed fact that the orderings TMV-TMV and OMV-TMV in the CVD structure are ungrammatical. I have shown that since TMVs have the +EPISTEMIC feature, they cannot occupy lower infinitival position in the flat VP. In other words, all TMVs have to be inserted into  $v^\circ$  to have access to the epistemic interpretation.<sup>161</sup>

Finally, our modal system explained how the modal relation in multimodal structures work. I have suggested that the modal base of the infinitival OMVs is subsumed by the modal base of a modal occupying the  $v^\circ$  position.

There are still several questions that remain to be asked in terms of how the modal semantic system works together with the syntactic theory of Czech modal CVDs developed in the earlier chapters. Namely, we have to determine where and how the root and epistemic readings are derived regarding the main levels of language

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<sup>161</sup> The only exception is *smět* ‘be allowed’, which, due to its idiosyncratic character, appears to be a TMV without the ability to attain epistemic interpretation.

representation: Lexicon, derivational syntax and LF (Logical form). Some of the hypotheses (Butler 2003) have already been outlined above. To continue developing them, I will investigate the root v. epistemic dichotomy more closely in the remainder of the thesis, ruling out first Lexicon and then derivational syntax as relevant for its explanation. Chapter 10 will then advocate LF as the ‘medium’ for the syntactic processes of root v. epistemic disambiguation.

## Chapter 8

### *Root v. Epistemic: disambiguation in the Lexicon*

## 8.1. Introduction

I have argued in the course of this thesis that the root v. epistemic dichotomy should be re-evaluated in light of the unifying semi-lexical theory of modals in Czech. Chapter 6 demonstrates that all Czech modal verbs, regardless of their epistemic and root interpretation, are syntactically the same. If they have a finite form, they are inserted in the structure as semi-lexical  $v^o$  that projects vP. However, the following ambiguity cannot be ignored:

- (1) Jan musí být v knihovně. *epistemic / root*  
Jan must3SgPres beInf in library  
'Jan must be in the library.'

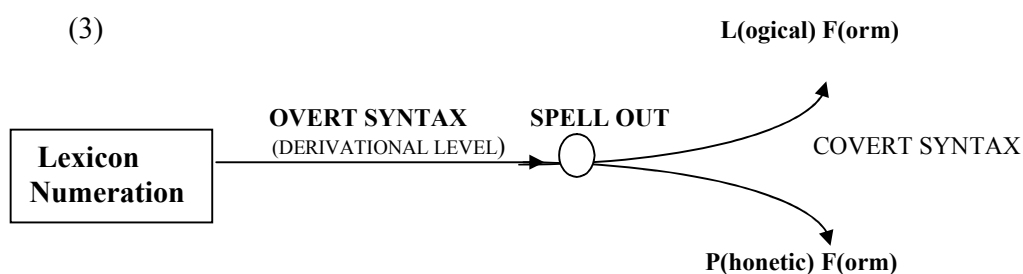
The example (1) contains two possible interpretations of the modal, represented as follows:

- (2) a. *mušet (Jan je v knihovně* 'Jan is in the library') *epistemic*  
'It must be true that Jan is in the library.'  
b. *mušet (Jan, být v knihovně* 'Jan', 'be in the library') *root*  
'Jan is obliged to be in the library.'

The modal in (2a) receives a wider – epistemic – interpretation, scoping over the whole sentence *Jan je v knihovně*. In contrast, the interpretation is narrower in (2b), which yields the root reading of the modal. The important semantic notion appertaining here is the *scope*: epistemic modals can scope over larger syntactic structures than root modals.

There is a well established tradition of research into root v. epistemic ambiguity. Cook (1978: 6) illustrates the general understanding that epistemic modality modifies a sentence, whereas root modality relates a subject of a sentence to an activity. Butler (2003: 3) assumes that the task of resolving ambiguity is the central task of any ‘good’ theory of modality. We have already noted that the majority of works dealing with the epistemic v. root dichotomy (Brennan 1997, Kratzer 1981, 1991, 1979) focus on its semantic consequences. However, the ambiguity appears to be relevant in syntax as well. Yet, in one of the more recent accounts, Abraham (2002) determines the epistemic interpretation as having neither any lexical effects (therefore not affecting the theta-grid), nor syntactic effect (not affecting local c-command relations) on the embedded predicate.

The argumentation that appears in this chapter and the remainder of the thesis is directly based on the language representation model outlined in the minimalist syntax (Chomsky 1995, 1998). It has the following character:



The Lexicon contains all the grammatical information that is available prior to syntax (e.g. subcategorization frames of verbs) in the form of individual lexical entries. In generating a particular grammatical structure (a sentence), each lexical entry is taken from the lexicon and then enters the syntactic derivation at a point determined by its properties. Generally speaking, lexical categories are inserted

earlier than the functional ones, which impacts on their syntactic position lower in the structure.

I have outlined that the root v. epistemic dichotomy is a recurring issue of any theory of modality. From the perspective of the language model in (3) above, there have been attempts to explain the dichotomy as being a part of the Lexicon (Ross 1969, Thráinsson & Vikner 1995), derived in the overt syntax (Drubig 2001) or interpreted by LF processes (Butler 2003).

This chapter will recall the main arguments of the ‘lexicalist hypothesis’, i.e. an hypothesis assuming that the epistemic v. root dichotomy is already encoded in the Lexicon prior to any syntactic derivation (or semantic interpretation). I will introduce the basic premise of the lexicalist approach (8.2.), critically examine the notions of ‘control’ and ‘raising’ on the background of the theta theory (8.3.) and then show the main problems of adopting the lexicalist hypothesis into our modal system (8.4.).

## 8.2. Two lexical entries for root and epistemic modality?

The lexicalist theory is based on the assumption that epistemic modal verbs are one-place predicates whereas root modals are two-place predicates (Ross 1969). Palmer (1979) mentions the following example:

- (4) a. John must be at home at six o’clock.
- b. Epistemic: must (John be at home at six o’clock) one-place P
- c. Root: must (John, be at home at six o’clock) two-place P

In (4b), the epistemic modal is regarded as a one-place predicate. The root modal in (4c) is then characterized as a two-place predicate, relating the subject to the rest of the clause. The interpretation in (4b) and (9c) demonstrates how the semantic (or scope) properties of the epistemic/root reading of the modal are translated into their generative syntax equivalents. Being able to scope over the whole sentence (a semantic property belonging to the epistemic reading) is reflected in syntax as being a one-place predicate. Similarly, the same connective line is drawn between the inability to scope over the subject of the sentence and the two-place predicate characteristics. The one-place predicates are sometimes referred to as *monadic* predicates, whereas two-place predicates are *dyadic* predicates. These terms have been recently employed in Wurmbrand (2001).

The general idea behind (4) above is that epistemic and root modals are two different types of predicates in the Lexicon. The disambiguation of root v. epistemic dichotomy, therefore, proceeds as a selection of one of the two separate lexical entries for modals. For instance, Czech *muset* ‘must’ would have had either the epistemic lexical entry or the root lexical entry in this framework. The epistemic lexical entry has an argument structure that is restricted to the subject. The root lexical entry, on the other hand, has both the subject and object argument. This appears to work similarly to the dichotomy between intransitive and transitive verbs. Ross (1969) argues that epistemic modals are intransitive verbs, whilst root modals are in fact transitives.

The theory of two lexical entries for modal interpretations has one important challenge to overcome. It has to answer the question of how the epistemic and the root predicate differ in terms of the argument structure; what  $\theta$ -roles they assign to their arguments, how they both comply with the rules of  $\theta$ -role assignment and how this is

reflected in the syntactic structure. The answer in generative syntax is based on the notion of *control* and *raising* structures.

### 8.3. Raising v. Control

Palmer (1979) notes that the raising v. control analysis has become one of the most common interpretations of the epistemic-root ambiguity within generative grammar. Since then, many works from different areas of interest added to the well-established issue.<sup>162</sup> Within the raising v. control theory, epistemic modals are characterized as predicates involving raising structures, whereas root modals involve control structures.

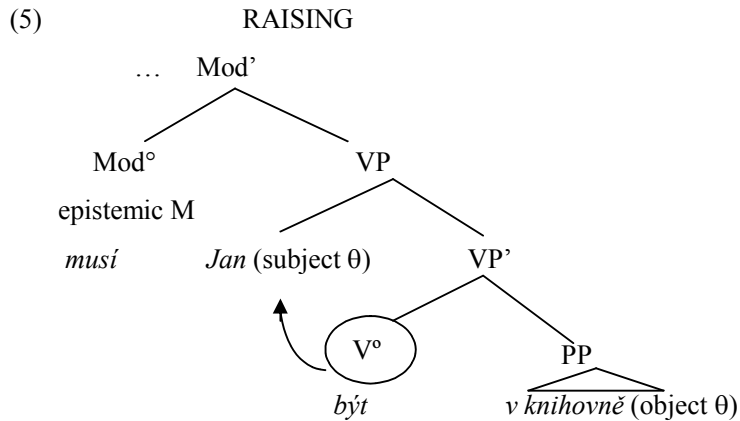
The raising structure contains the subject argument that is base generated in the lower position under the VP complement of a modal verb, and as such receives its theta-role from the infinitive in V°. The sentence *Jan musí být v knihovně* ‘Jan must be in the library’ can be represented as a raising structure in (5), with the epistemic modal heading a hypothetical ‘ModP’ for the illustration purpose<sup>163</sup>:

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<sup>162</sup> The list begins with Ross (1969) and Perlmutter (1970) and through numerous studies finds its most recent entries in Barbiers (1995), Thráinsson & Vikner (1995), Wurmbrand (2001) and Wurmbrand & Bobaljik (1999). Similarly, the  $\theta$ -role assignment theory has undergone some substantial changes since Chomsky (1981, 1986), through Brody (1995) and Bosković (1994) to its recent dismissal in the minimalist syntax framework (Chomsky 1995, Hornstein 2000).

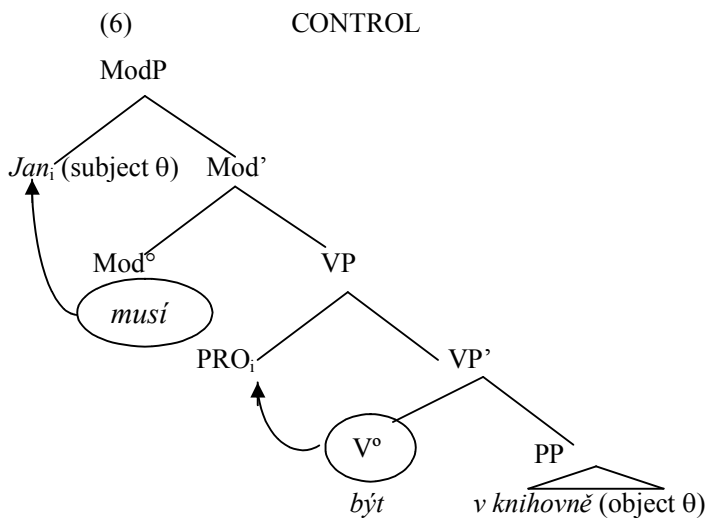
<sup>163</sup> Chapter 6 demonstrated that the derivation of Czech modal CVDs does not involve a ModP projection. Neither does it involve raising v. control dichotomy as will be argued further.





After receiving the subject theta-role, the subject *Jan* moves further up to form the ‘surface’ sentence structure. The raising structure stipulates that the modal does not assign a theta-role to the subject.

Control structures, on the other hand, involve the PRO, a syntactic element that acts like a subject of a lower infinitive verb. This phonetically silent category receives its  $\theta$ -role from the infinitive, whereas the overt subject of the clause, this time entering the derivation inserted under the modal verb, gets its  $\theta$ -role from the modal. The representation of control structure looks as follows:



The subject of the clause in (6) is base-generated higher in the structure, in the Specifier of ModP. Its  $\theta$ -role is assigned by the modal and is coreferent with the empty PRO that plays the role of a ‘subject’ of the lower predicate. The infinitive in the head of VP assigns a hypothetical  $\theta$ -role to this phonetically invisible subject.

The question that still remains unanswered is why the modal in raising structures cannot assign any  $\theta$ -role (either to the subject or the object of the sentence) at all. The raising v. control analysis is conditioned by the principles of  $\theta$ -role assignment, namely  $\theta$ -Criterion, introduced in Chomsky (1981: 36):

*(7)  $\theta$ -Criterion*

Each argument bears one and only one theta-role, and each theta-role is assigned to one and only one argument.

According to the raising v. control theory, root modal verbs cannot involve raising structure if the  $\theta$ -criterion holds. If a root modal assigns a theta role to the surface subject DP that can have only one  $\theta$ -role according to the  $\theta$ -criterion, the modal structure cannot be the raising structure. If it were, the raising subject would receive a double theta role, one from the modal and one from the embedded predicate. This is prohibited by (7) above.<sup>164</sup> Therefore, modals can be only interpreted as dyadic predicates if they involve control structures, which then implies that there is a PRO category taking care of the external  $\theta$ -role received by the embedded verb, whilst the subject receives its  $\theta$ -role from the modal directly (Barbiers 2002b).

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<sup>164</sup> However, already Jackendoff (1972) presumed that certain structures tend to contain dual theta roles. He suggested that in ‘John deliberately rolled down the hill’, John is both an Agent and a Theme. Whilst this approach clearly shows confusion between semantic and syntactic explanation, it can be seen as a proof that the strong  $\theta$ -Criterion has been never much favoured amongst the researchers.

In the syntax of government and binding (Chomsky 1981),  $\theta$ -role assignment has to take place at D(deep) structure. This implies that the argument DPs cannot be base generated in non-thematic positions. In the raising structure (5), the subject of the sentence cannot enter the derivation in the Specifier of ModP because such a position is not a thematic position when a modal has epistemic reading.

There have been several attempts to weaken the  $\theta$ -Criterion principle since Chomsky (1981). The minimalist syntax renders the principle redundant after dismissing the D-structure (Brody 1995, Bosković 1994, Chomsky 1995). This approach enables a DP argument to be merged directly into a non-thematic position. The only principle that remained is the principle of Full Interpretation (FI) – in order that FI is satisfied, everything at LF must receive an interpretation. This shift from Lexicon to LF represents the pattern of generative syntax that is reflected in our account of root v. epistemic dichotomy. Subsequently, let us analyze the major difficulties of the lexicalist hypothesis.

#### 8.4. The problems of the lexicalist hypothesis

The previous section demonstrated that the theory of modal verbs as raising and control predicates stands in the centre of the lexicalist hypothesis of the root v. epistemic ambiguity. The application of the  $\theta$ -Criterion ruled out the raising structure in the case of root modals to prevent the existence of double  $\theta$ -roles in a single argument. The  $\theta$ -Criterion has lost, however, its theoretical status in the recent development of generative syntax. Following the change from the structural (D-syntax) to the interpretational (LF) explanation, theta theory is no longer a major supporting factor in distinguishing between raising and control in modal structures.

The following are the most relevant issues that the raising v. control cannot successfully resolve.

#### 8.4.1. The problematic status of PRO in Czech

Barbiers (2002a, 2002b) assumes that the PRO-subject in the infinitival complement of the modal is problematic because infinitival complements without *te* ‘to’ usually cannot have PRO as their subject. This is indicated by the Dutch examples below:

- (8) a Jan voelde [zich/\*PRO wegzakken in de modder]  
Jan felt himself/PRO sink in the mire  
‘Jan felt that he was sinking in the mire.’
- b. Jan voelde dat hij wegzonk in de modder.  
‘Jan felt that he was sinking in the mire.’
- c. Jan at [SC zich/\*PRO ziek]  
Jan ate himself/PRO sick  
‘Jan ate so much that he got sick.’ (Barbiers 2002a: 5)

The infinitival complement in (8a) requires a reflexive subject to express meaning identical to (8b). Since the role of the subject of the infinitival phrase is already taken by the reflexive in both the biclausal (8a) and small clause (8c) analysis, the PRO element is ruled out.

Czech, similarly to Dutch, does not have the infinitival *to* that would enable a PRO subject. Moreover, no reflexive can fill in the space of the PRO in the infinitival complements in a way similar to (8). The situation in Czech can be described as a part

of a broader principle that infinitival complements without ‘to’ (or corresponding element in Germanic and Romance languages) cannot usually have PRO as their subject. The question is also whether the infinitival complement can be analyzed as a Small Clause. If it can, as is the case in (8c), the impossibility of PRO in this special case of reflexive subjects is an instance of a broader phenomenon of SC-complements being prohibited from having PRO subjects (Stowell 1981).

A possible way of explaining this is to argue that the infinitival complement is not a SC but much larger constituent, e.g. CP or TP. However, considering the Czech modal phrase, it has been established in chapter 6 that the complement of a modal is a flat VP.<sup>165</sup> Recall the principle that Czech modals are not able to take clausal complements.<sup>166</sup> I have introduced this principle as one of the properties of Czech modal verbs showing their functional character. Let us repeat the relevant data here:

- (9) a. Musel                      číst              tu   knihu.  
          must3SgPast        readInf    that bookAcc  
          ‘He had to read that book.’
- b. \*Musel,              že        bude              číst              tu   knihu.  
          must3SgPast    that   Aux3SgFut readInf that bookAcc  
          (‘He had to that he would read that book’)

The ungrammaticality of (9b) demonstrates the fact that the complement of the modal in Czech cannot be a CP due to the inaccessibility of *že* ‘that’ (i.e. a category of the type C) to the modal.

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<sup>165</sup> Czech in this case differs substantially for example from Macedonian, where there is a set of modals able to take subjunctive complements (Tomić 2002).

<sup>166</sup> See chapter 5 for the analysis of the subcategorization frame of Czech modals as restricted to the infinitival complements.

The argument against the TP character of a complement of the modal is based on the situation already observed in Barbiers' characteristics above. As mentioned before, Czech modal verbs can only take default 'bare' infinitives as complements. The infinitive cannot bear any temporal features by definition. Hence it is impossible for an infinitival complement of a modal in Czech to be treated as a larger element of the category T. It seems that the only possible way to assume that the complement can be characterized as such is in languages like English that have 'to-infinitives' or their equivalents. These elements preceding infinitives can then arguably sit in the head of a lower TP. This is not, however, the case in Czech.

Crucially, the above observed facts imply that there is not enough evidence to involve PRO in Czech modal structures, regardless of their interpretation as raising or control structures.

#### 8.4.2. Additional $\theta$ -Criterion issues – modals as raising verbs?

The category PRO has been ruled out from the modal structures in Czech. As we have seen, however, the classic version of the  $\theta$ -Criterion requires the lower PRO subject in the control structure to avoid the situation when the sentence subject is assigned its  $\theta$ -role twice. This problem could be solved by the revision of the  $\theta$ -Criterion and elimination of PRO from modal structures completely. This leads to the assumption that all modal verbs in fact involve raising. This subsection recounts its major points and then argues against it as an adequate solution.

Thráinsson & Vikner (1995: 63) propose for Danish that all modal verbs form raising structures, where the subject is base-generated in the complement of a modal and then raised into the subject position. This proposal is not incompatible with the

general belief that epistemic modals do not assign a  $\theta$ -role to their subject. On the other hand, the question is how the raising analysis can account for root modals, which, as have been argued, do assign a theta role to their subject. Thráinsson & Vikner (1995) propose that root modals do not assign an obligatory subject  $\theta$ -role, but an *additional  $\theta$ -role* to their subject. They argue that this additional  $\theta$ -role is not in conflict with the  $\theta$ -role the subject already received (from the infinitival complement of the modal) before it moved to the subject position. Consequently, the  $\theta$ -Criterion is modified as (10):

(10) *Extended  $\theta$ -Criterion*

- a. No argument may have more than one additional theta-role.
- b. Each additional theta-role must be assigned to one and only one argument.
- c. An additional theta-role may be assigned to an argument that already has a theta-role.

(Thráinsson & Vikner 1995: 64)

The principle in (10c) allows the raising structure analysis to be employed for both epistemic and root readings of a modal. The question is, however, what kind of status this additional  $\theta$ -role has and on what grounds it is syntactically supported rather than stipulated as an ad hoc solution.

The additional theta role is assigned to arguments already bearing a ‘regular’  $\theta$ -role. It seems, therefore, that it has to be defined as a certain type of a ‘non-argument’, or *argument adjunct* to ensure that it is typologically different from the classical ‘argument’  $\theta$ -role and can freely co-occur with it on the subject without violating the revised  $\theta$ -criterion. As a result, derivation of epistemic modal structures in Danish differs from that of root modal structures only in the application of (10c),

which allows the latter to assign an additional  $\theta$ -role to the subject in the higher position. Nevertheless, both are raising structures:

- (11) a. EPISTEMIC
- $\theta$
1. [NP e] skal [han i more sig i]  
 shall he enjoy self
2. Han i skal [t i more sig i]  
 < $\theta$ >  
 'He is said to enjoy himself.'
- b. ROOT
- $(\theta)$        $\theta$
1. [NP e] skal [han i more sig i]  
 shall he enjoy self
2. Han i skal [t i more sig i]  
 < $\theta$ , ( $\theta$ )>  
 'He must enjoy himself.'
- (Thráinsson & Vikner 1995: 64-65)

According to (11), both epistemic and root modal interpretations are derived in the same way. If a modal is epistemic, the surface subject ends up with one 'classical' argument theta role, < $\theta$ >. If it has the root reading, the subject is assigned an additional  $\theta$ -role, resulting in < $\theta$ , ( $\theta$ )>.

Whilst the introduction of an additional  $\theta$ -role offers an interesting example of unified syntactic analysis for epistemic and root modals, it cannot avoid certain difficulties. Firstly, it is not fully explained what the thematic structure of a surface subject symbolized as < $\theta$ , ( $\theta$ )> means syntactically. Other than to weaken the  $\theta$ -Criterion and enable the raising structure for root modals, what reasons support the existence of ( $\theta$ )?



Bobaljik & Wurmbrand (1999) avoid the question by suggesting that modal verbs, as raising predicates, are generally not responsible for any  $\theta$ -roles at all. Properties of the subject, which starts out in the lower predicate, are determined by the lower predicate and not the modal. The fact that all modals are treated as raising predicates in the Lexicon imply that they are inserted high in the structure and do not have access to the subject in derivation. As a result of this restriction, theta and case properties of the subject are determined only by the lower verb and not the modal (Wurmbrand 1999). This account is substantially different from the previous one in the assumption that the introduction of an additional  $\theta$ -role is not necessary.

One of the strongest arguments in favour of the hypothesis that the subject in modal constructions starts out in the lower (infinitival) predicate is provided by languages involving expletive subjects in modal structures with root interpretation. For instance, *there*-insertion in English (Wurmbrand 1999, Bobaljik & Wurmbrand 1999) demonstrates that the ‘real’ subject is inserted low in the structure even in strong root modal contexts:

- (12) a. There may be singing but no dancing on my premises.  
       b. There can be a party as long as it’s not too loud.  
       c. There must be a solution to this problem on my desk, tomorrow morning!  
       d. There will be no complaints when we go to Aunt Cassandra’s!

The expletive *there* occupies the ‘surface’ subject position in (12), forcing the subject argument to stay below the modal. This induces the raising structure, where the modal does not have any effect on the subject in terms of  $\theta$ -role assignment.

Another argument is drawn from the Icelandic non-nominative subjects in modal constructions. Such subjects are ‘quirky case marked’ because some verbs can alter the unmarked nominative by requiring another case on the subject in the process of case assignment. For example, the verb *vanta* ‘lack’ can only occur with an accusative subject, whereas *líka* ‘like’ requires a dative subject. The reasoning is then directed in the way that in modal structures involving these verbs, the lower (complement) verb should determine whether the quirky subject is assigned if the raising analysis holds. Modal verbs in Icelandic are not quirky case assigners. Therefore, if they were responsible for the case assignment to the subject, it would have to be in nominative regardless of the character of the lower verb. However, it seems that when the lower predicate is a quirky case assigner in modal structures, the nominative on the subject is ungrammatical:

- (13) a. Haraldi / \*Haraldur          verður að líka hamborgarar  
          Harold-DAT / \*Harold-NOM must to like hamburgers  
          ‘Harold must like hamburgers (in order to be accepted by his new  
          American in-laws).’
- b. Umsækjandann      verður að vanta peninga  
          The-applicant-ACC must to lack money  
          ‘The applicant must lack money (in order to apply for this grant).’

(Wurmbrand 1999: 603-4, Bobaljik & Wurmbrand 1999)

The root interpretation is forced in both (13a) and (13b). Nevertheless, the effect of the lower verb on the case of the subject remains the same, strongly suggesting that all modal verbs have to be analyzed as raising structures.

Finally, the third argument is based on the behaviour of modals in passive constructions. Wurmbrand (1999) uses German examples to establish the conditions for passivization of modal structures. The property that tells whether the V category can be passivized consists in the ability (or lack of the ability) to have an (underlying) external argument. In German, the verbs that do not have such an argument are generally assumed to fall into the category of unaccusatives.

Not all verbs that combine with infinitival complements are unaccusatives. In some, such as *versuchen* ‘try’ or *beschlossen* ‘decide’, the passivization is possible:

- (14) a. Es wurde zu tanzen versucht/beschlossen.      impersonal (control) passive  
           It was to dance tried/decided  
           ‘It was tried/decided to dance.’ (=Somebody tried/decided to dance.)
- b. \*Es wurde (zu) tanzen geschienen.              impersonal (raising) passive  
           It was (to) dance seemed  
           ‘It was SEEM to dance.’
- c. \*Es wurde (zu) tanzen gemusst.              impersonal (modal) passive  
           It was (to) dance must-PART  
           ‘It was MUST dance.’

The first two structures in (14) outline the difference between the impersonal (control) passive and impersonal (raising) passive in German. While the former is perfectly acceptable, the latter proves to be ungrammatical. This clearly shows that the raising analysis is preferred in structures disallowing passivization. (14c) then represents the blockage of passivization in the constructions with modals. Wurmbrand argues that the raising analysis offers better explanation of the fact that modals cannot have any external arguments. Since modals do not project an external argument, the passive is blocked, as we would expect it to be within raising structures. Moreover,

the passive structures further prove that modals do not have an independent argument structure.

#### 8.4.3. Against *Raising* in Czech modal constructions

So far, it has been shown that the biggest challenge for the control – raising theory was the  $\theta$ -Criterion. In order to satisfy the requirements of the  $\theta$ -Criterion, control structures had to involve a phonetically empty PRO, a syntactic element that had the role of a subject of the ‘lower’ (infinitival) predicate. Since it proved to be problematic to stipulate the existence of PRO in Czech,<sup>167</sup> we have reviewed approaches that avoided this empty category altogether.

Thráinsson & Vikner (1995) suggested a revision of the  $\theta$ -Criterion that would enable subjects to be assigned an additional adjunct  $\theta$ -role by modals, whereas Bobaljik & Wurmbrand (1999) suggested that all modal verbs involve raising structures. We have questioned the former as an instance of an ad hoc hypothesis. The latter proposal, on the other hand, was documented as adequate for sets of data across Germanic languages. These included *there*-insertion in root modal constructions in English (example (12) above), Icelandic quirky non-nominative subjects (13) and German passive modal structures (14). All three sets of data pointed out that the raising structure should be a general representation of modal constructions (Wurmbrand 1999, Bobaljik & Wurmbrand 1999).

The situation in Czech is different, since all three arguments for raising lack valid evidence. Firstly, Czech does not have expletive subjects, so we cannot observe the behaviour of modals in syntactic environments similar to (12). Secondly, Czech

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<sup>167</sup> The lack of *to*-infinitives was the major argument against PRO in Czech syntax.

does not involve any quirky case assignment either – the subject is always in the nominative case, regardless of the character of the agreeing verb or its position in the structure. The third argument – passive under modals – seems to be more serious at first sight. It is a known fact that modals cannot be passivized in Czech; however, they still can enter passive structures of a different type:

- (15) a. Bylo                      tam   rozhodnuto   tančit.  
           Aux3SgNeut   there decidePass   danceInf  
           ‘It was decided there to dance.’
- b. Rozhodlo                se        tam   tančit.  
           Decide3SgNeut Refl   there   danceInf  
           ‘It was decided there to dance.’ (= someone there decided that we would dance)
- c. \*Bylo                      tam   museno   tančit.  
           Aux3SgNeut   there mustPass danceInf  
           ‘It was MUST to dance there.’
- d. Muselo                se        tam   tančit.  
           Must3SgNeut Refl   there   danceInf  
           ‘It MUST there to dance.’ (= we had to dance there)

The examples (15a) and (15c) show the same pattern as observed in German above in (14). Whilst a fully lexical verb *rozhodnout se* ‘decide’ (which can take infinitival complements similarly to modals) can be passivized, the TMV *muset* ‘must’ cannot, yielding the ungrammatical structure in (15c). However, passive structures in Czech can also be created by the finite verb taking on the impersonal reflexive form in the past tense, as demonstrated by (15b) and (15c). The example (15b) involves the verb

*rozhodnout se* ‘decide’ in the unmarked third person neutral form in the past tense, followed by the reflexive *se*. The ‘surface’ subject argument is not phonetically realized, which creates the passive effect. Crucially, these passive forms are grammatical also in the case of modals, as shown in (15d). The variety of the examples in (15) above, therefore, shows that it is difficult to implement the passive argument in Czech modal syntax. Moreover, the inability to passivize in terms of (15c) is not only an attribute of modals in Czech, but also the intransitives, such as *žít* ‘live’,<sup>168</sup> *vypadat* ‘look like’ or the obligatory reflexive *zdát se* ‘seem’. In the case of the intransitive verbs, a situation similar to (15c-d) occurs:

- (16) a. Jan žil dvacet let v Praze.  
 Jan live3SgPast twenty years in Prague  
 ‘Jan has lived in Prague for twenty years.’
- b. \*Bylo tam (v Praze) žito dobře.  
 Aux3SgNeut there in Prague livePass good  
 ‘It was lived there (in Prague) well.’
- d. Žilo se tam (v Praze) dobře.  
 live3SgNeut Refl there in Prague good  
 ‘It LIVE there (in Prague) well.’ (= we lived there well, it was good to be living there)

<sup>168</sup> The intransitive *žít* ‘to live’ has an ‘internal object’ *život* ‘life’ and can potentially assign a quasi-object  $\theta$ -role to it:

- (i) a. Jan žil dlouhý život.  
 Jan live3SgPast long lifeAcc  
 ‘Jan lived a long life.’
- b. ?Dlouhý život byl žit Janem.  
 long lifeNom Aux3SgPast livePass JanInstr  
 ‘A long life was lived by Jan.’

However, (i) is the only case when *žít* ‘to live’ can involve an object argument and hence does not merit transitivity.

Importantly, this all shows that we do not need to introduce raising characteristics into the lexical entry of Czech modal verbs.

There is another major argument against raising in Czech modal structures. The raising hypothesis implies that modal verbs do not have any access to the subject of the sentence as it is base-generated in the lower position below the modal. Crucially, Bobaljik & Wurmbrand (1999) claim that modals do not assign a  $\theta$ -role to the sentence subjects. In contrast, I have shown that Czech modal verbs participate on the joint theta-grid of the predicate precisely by being responsible for a subject  $\theta$ -role. Furthermore, the ability to assign a  $\theta$ -role to the subject of the sentence has been considered an important semi-lexical property of Czech modals. It was demonstrated in chapter 6 that the final argument structure of modal CVDs is a result of the syntactic configurations within the vP projection, rather than an ‘external principle’ such as  $\theta$ -Criterion.

The capacity to participate on the argument structure is also reflected in the morphosyntactic properties of Czech modals. Unlike English modal verbs, they distinguish between finite and infinitive forms (*musí-muset* ‘he/she must’-(to) must, *může-moci* ‘he/she can-(to) can). When occupying the  $v^0$  position, Czech modals are always in the finite form and agree in Person and Number in present/future and in Person, Number and Gender in past with the subject of the sentence. If the subject was base-generated below the modal as the raising hypothesis assumes, how can the agreement be explained? One possible answer is that it raises there in order to receive agreement features, but what then is the reason for it to be base-generated between the modal and its complement? A much simpler explanation is that it is base-generated above the modal verb. Also, there is no reason for the subject not to receive a subject

theta role from the modal when it can receive a case and agree with the modal. In Czech, the modal clearly relates to the sentence subject, both morphologically and syntactically. Whilst there are reasons to assume the raising structure in English, Czech provides several important counterarguments to this position.

#### 8.4.4. Raising and Scope

We have seen that there is no satisfactory data evidence for the raising structure in Czech. Moreover, there are also theoretical reasons for arguing against raising in modal constructions. The attractiveness of the raising theory lies in its ability to account for both epistemic and root modals in a unifying way. This means, however, that it faces certain difficulties in explaining the differences in scope involved in modal interpretations.

Since the raising is syntactically defined as A-movement, the question is how the syntax of A-movement correlates with the existence of epistemic and root modal interpretations. It is generally believed that the scope properties can indeed be syntactically captured by A-movement (May 1977, 1985). A-movement in raising structures allows an interpretation in which the subject takes narrow scope with respect to the matrix verb:

- (17) a. Someone from New York is likely to win the lottery.  
       b. [Someone from NY] is likely [~~Someone from NY~~] to win the lottery.  
            $\exists >> \text{likely}$   
       c. [~~Someone from NY~~] is likely [Someone from NY] to win the lottery.  
            $\text{likely} >> \exists$

(Fox 1999)



The raising structure in (17) enables the double interpretation formalized in (17a) and (17b). In the former, the subject has a wide scope over the matrix verb, yielding the following interpretation: ‘There is somebody from N. Y., and it is likely that he will win the lottery’. The latter is considered to be only available as a result of raising (or A-movement), where the subject retains the lower scope. The interpretation is made accordingly: ‘It is likely that somebody from N.Y. will win the lottery.’ The existential quantifier in this case does scope only over the lower verb ‘to win’.

Wurmbrand (1999) assumes that the scope ambiguity in (17) applies both to epistemic and root interpretation, rather than contributing to the distinguishing factor between them. Since all modal structures have to entail raising, both epistemic and root readings involve higher and lower scope positions:

(18) a. Somebody from New York must have won in the lottery.

[Somebody from NY] must [~~Somebody from NY~~] have won the lottery.

[~~Somebody from NY~~] must [Somebody from NY] have won the lottery.

EPISTEMIC

b. Two Austrian skiers must win the next race.

[Two A skiers] must [~~Two A skiers~~] win the next race.

[~~Two A skiers~~] must [Two A skiers] win the next race.

ROOT

The interpretation in (18) maintains that all modal verbs are raising predicates. However, it creates more problems than it solves. The main problem with this proposal is that it cannot explain how the scope properties in fact participate on the epistemic v. root disambiguation. Nevertheless, the relevance of scope for the root v. epistemic reading is clear. Wurmbrand (1999: 608) argues that the lower subject in the epistemic interpretation (18a) is ‘pragmatically more natural’ than the subject in

the higher position. Similarly, the interpretation of the subject in the higher position is favoured in the root reading (18b). This ‘pragmatic markedness’ is found in the modal structures above, but is missing in the original example in (18). This is significant. I suggest that the strong preference of a lower subject interpretation in (18a) is influenced by the character of epistemic modality. The modal has to scope over the whole sentence for the epistemic sense to be kept.

Another theoretical problem in terms of scope in raising structures is created by the fact that they involve the process of *lowering*. Since all modal verbs, according to the raising hypothesis, entail raising prior to the semantic interpretation (after Spell-Out in minimalist syntax), the final structure always has subjects in the higher position above the modal. Therefore, we are faced with the necessity of explaining how the lower position of the subject can later be accessed for interpretation. May (1977) advocates the syntactic A-reconstruction, or lowering, that proceeds in syntax (at the derivational level). On the other hand, Lasnik (1998) argues against the A-reconstruction as a plausible syntactic process. According to Lasnik, the ‘raising’ structures such as *Some politician is likely to address John’s constituency* involve variations of readings that can be explained pragmatically rather than by A-reconstruction. The double meaning, for instance, can be described as falling into theme-rheme properties of the subject. When using the higher subject position, the speaker has in mind a specific, particular politician who is likely to address John’s constituency – the subject becomes a theme (topic) of the utterance. In lower reading, the subject is non-specific and remains a rheme. I share Lasnik’s reservations regarding the validity of A-reconstruction as a syntactic operation<sup>169</sup> and assume that

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<sup>169</sup> Wurmbrand & Bobaljik (1999: 14) agree to some extent with the difficulty of A-reconstruction in syntax. They introduce a parallel LF operation (LF movement) to address the most serious questions regarding the LF effect. Within an updated framework, reconstruction can be achieved by the

the problem would be best avoided by abandoning the raising hypothesis entirely. Neither control v. raising, nor raising alone is an appropriate tool for explaining the scope differences between epistemic and root readings.

#### 8.5. Concluding issues – parsimony in the Lexicon and modal disambiguation

We have discussed important arguments against the lexicalist hypothesis in Czech, which assumes that the epistemic and root modality is encoded in the Lexicon in form of the two separate lexical entries. The most significant theoretical disadvantage of this assumption probably concerns language acquisition. If we have two entries for some phonetically identical modals in the Lexicon, we create a problem for learnability. The child learning modal verbs in Czech would have to learn the differences between epistemic and root interpretation while acquiring the lexicon, in the form of two different lexical units. Whilst already highly doubtful in terms of the parsimony in the Lexicon, this premise has to further deal with the issue of modal disambiguation.

The existence of the epistemic and root modal entries would be more justified if the epistemic v. root ambiguity was clearly present within all modal structures at all times. This is, however, not the case. Only TMVs have the +EPISTEMIC, and therefore are semantically ambiguous:

- (19) a. Jan musí (TMV) být v knihovně. *epistemic / root*  
           Jan must3SgPres beInf in library  
           ‘Jan must be in the library.’

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cooperation of the overt syntactic movement and covert movement at LF. In some cases, A-movement does not have the ability to reconstruct.

- b. Jan chce (OMV) být v knihovně. \*epistemic / root  
 Jan want3SgPres beInf in library  
 ‘Jan wants to be in the library.’

Furthermore, even TMV structures can be disambiguated in certain grammatical contexts. In the situation of disambiguation, the modal structure receives a *preferred reading*. For instance, epistemic reading is preferred when the infinitival complement of a modal is an I(individual)-level predicate. In semantics, I-level predicates (*be from*, *know*<sup>170</sup>) differ from S(stage)-level predicates (*walk*, *speak*) by being linked directly to the individual as its internal property. Whilst S-level verbs predicate over the spatiotemporally conditioned stage of the individual, I-level predicates are understood to express the stable, defining attributes<sup>171</sup> of an individual (Kratzer 1995). The use of an I-level predicate in modal structures causes the epistemic interpretation to be favoured (Barbiers 2002b).

- (20) Jan musí být z Čech. epistemic / ?? root  
 Jan must3SgPres beInf from Bohemia  
 ‘Jan must be from Bohemia.’

<sup>170</sup> Arguably, when someone begins to know something, knowing becomes semantically an inherent property. It is often a question of personal judgements whether *know* can be defined as I-level rather than S-level. In fact, ‘knowing’ can be seen as a process that has both a beginning and an end and thus undermines the views in which it lacks any spatiotemporal conditions. The predicate *to be from* is a stronger I-level candidate.

<sup>171</sup> Musan (1995) points out the interesting consequence of using an I-level predicate: being spatiotemporally unrestricted, I-level predicates appear in the unmarked present tense. When they have a past tense form, the temporal conditions of the individual are affected:

- (i) a. Gregory is from America.  
 b. Gregory was from America. → Gregory is dead

The use of the I-level predicate in (ib) has to imply that Gregory is no longer alive. An individual cannot ‘lose’ the property of ‘being from America’, unless it ceases to exist. Some pragmatic contexts can neutralize this presupposition, but these are not important for our argumentation.

In (20), the interpretation *I am certain (using my knowledge of Jan's origin) that Jan is from Bohemia* is preferred to *Jan is obliged to be from Bohemia*. There are other pragmatic contexts that appear to weaken the preference of the epistemic interpretation in (20).<sup>172</sup> However, (21) below shows that the preferred reading is also realized by adding further material, such as temporal adverbs, into the TMV structure:

- (21) Jan musí být vždy v knihovně. ??epistemic / root  
 Jan must3SgPres beInf always in library  
 'Jan must be always in the library.'

The presence of the temporal adverb *vždy* 'always' creates the preferred root reading. In general, TMVs seem to favour epistemic reading in certain contexts whereas their root interpretation is preferred in others. Whilst the preference is not strong enough to create grammaticality issues, it further questions the feasibility of having a strong root v. epistemic distinction encoded in the Lexicon.

## 8.6. Summary and conclusions

Chapter 5 proposes the unified lexical entry for Czech modal verbs. In accordance to the theory presented there, the modal lexical entry does not contain information about root and epistemic interpretation. Consequently, there is only one lexical entry for semantically ambiguous modal verbs in Czech.

In this chapter, we first discussed the main argument of the lexicalist approach, claiming that root modal verbs are control predicates and epistemic modals

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<sup>172</sup> In the context of a (social) game or a play, Jan can be forced into the role of being from Bohemia. In such cases, root interpretation can be recovered, which is one of the reasons to talk about 'preference' rather than 'grammaticality'.

are predicates involving raising. We have seen how this approach has led to several modifications of the principle of  $\theta$ -role assignment and subsequently to the proposal that all modal structures entail raising (Wurmbrand 1999, Wurmbrand & Bobaljik 1999). The main consequence of this proposal was that the modal in raising structures did not have access to the low-generated subject in terms of the  $\theta$ -role assignment and agreement properties. Whilst it seemed acceptable in the case of the English, Icelandic and German data, we have not found similarly sufficient evidence in Czech.

I have demonstrated that Czech modal structures do not involve a phonetically empty PRO subject of the lower (infinitival) predicate(s). This could be accounted for by assuming that all modal verbs are raising verbs. However, Czech does not have expletive subjects or ‘quirky’ cases that would require the subject to be generated below the modal in the structure. Moreover, the passivization under modals proved to be inconclusive as well. It is plausible to suggest, therefore, that the lexical entry of Czech modals does not involve information regarding raising.

Instead of being encoded in the Lexicon, I suggest that the root v. epistemic ambiguity is caused by the different scope properties of the modal. In terms of the subcategorization frame of Czech modal verbs, the only relevant information regarding different modal interpretation is *scope* contained in the semantic feature  $f^\wedge$ , analyzed in chapter 7.

## Chapter 9

*Root v. epistemic derived in (overt) syntax*

## 9.1. Introduction

So far, we have dealt with the theories that treated epistemic and root modal verbs as different types of predicates, determined semantically and to some extent syntactically prior to their entering the syntactic derivation. Now we will look at the claims suggesting that two completely different derivational structures have to be devised to disambiguate epistemic v. root ambiguity.

The derivational hypothesis argues that the Lexicon is no longer an important telling point – epistemic and root modals might have been considered one-place and two-place predicates respectively, however they both syntactically differ not in predicative properties but in different insertion-points.

The later development of the raising v. control theory analyzed in the previous chapter is close to bridging lexicalist and derivational approaches. The researchers working with the theory assumed that the operations in syntax (A-movement, A-reconstruction etc.) can contribute to the understanding of the different predicative status of epistemic and root modality. However, the emphasis was still on the argument structure and Theta theory. Epistemic modals have been distinguished from root modals by the proposal that they do not assign a  $\theta$ -role to the subject or affect it in any other way. Such proposals shaped the syntactic explanations – the syntactic operations had to ensure that the syntax of epistemic and root modals mirrors their supposed differences in argument structure.

All the syntactic operations that have been worked with were characterized as the operations of movement. The derivational analysis goes beyond the simple movements as an explanation. It presumes that there is, above all, strong syntactic evidence for the claim that epistemic and root modals form different structures. The



argument structure becomes irrelevant, in accordance with the recent developments of Minimalist Program.

In the following sections, I will first show the main arguments for different derivation of root and epistemic modality, such as projection above and below tense and negation respectively (9.2.-9.4.). The concluding section (9.5.) then argues against the derivational approach and presents the data evidence in favour of the assumption that root v. epistemic interpretation does not affect the derivation of Czech modal CVDs as presented in chapter 6.

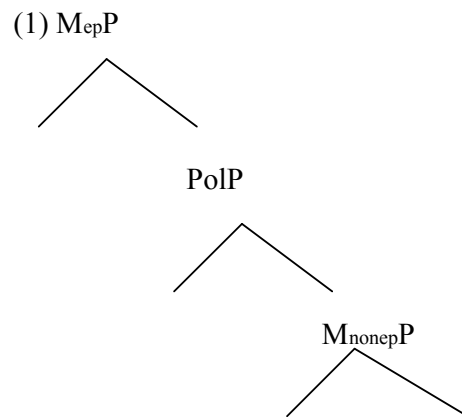
## 9.2. Drubig's syntactic form of epistemic modality

In Drubig (2001), the syntactic properties of epistemic modals are identified with their scope properties. It means that rather than being held to the latest possible moment of explanation at the level of LF, the scope characteristics of modals (particularly ones allowing epistemic interpretation) are derived in syntax. The concept of the epistemic modal as extra-modal, an evidential marker, is reflected by its syntactic (i.e. scope) properties and place in the functional hierarchy of the clause (Drubig 2001: 3).

### 9.2.1. Negation

The hierarchy of functional categories in the sentence structure splits epistemic and root modality syntactically. The first important “splitting element” in Drubig's theory is negation. Drubig argues that whilst the case of *must* is inconclusive since it has a wide scope over the negative marker regardless of whether its interpretation is epistemic or root, the scope of *may* in relation to negation

varies according to the particular (epistemic/root) interpretation. This is possible because epistemic modals are excluded from the scope of negation. The syntactic representation of the functional hierarchy involving modal interpretations and negation has the following character (Drubig 2001):

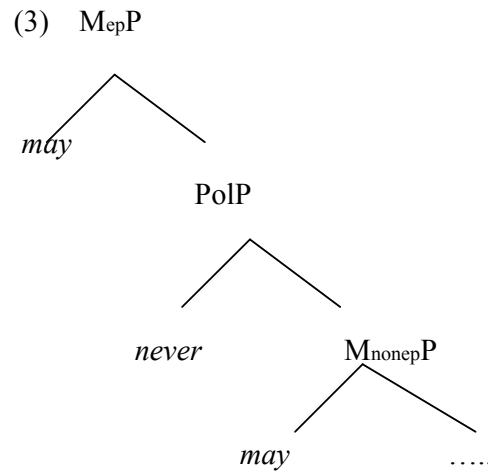


The tree in (1) demonstrates the derivational structure where epistemic and non-epistemic modals are base-generated in different positions: root modals under the polarity item, epistemic modals above. This structure has disambiguating character regarding modal interpretation. Whenever negation scopes over the modal, it implies the non-epistemic reading of the modal. For instance, the modal in the sentence *Nobody may be at home* is forced to have only non-epistemic interpretation due to the negative quantifier *nobody* being in the sentential scope. In general, as long as a modal structure involves the position of a negative marker guaranteeing a wide, sentential scope above the modal, the epistemic reading is ‘filtered out’ in favour of the root one:

- (2) a. John may never leave early. EP  
 b. Never may John leave early. \*EP  
 c. John never may leave early. \*EP

(Drubig 2001: 7)

The order of the modal and the negative adverb in (2a) implies the epistemic interpretation of *may* and rules the root interpretation out. On the other hand, the scope order in (2b) and (2c) enables the root reading and disallows the epistemic reading of *may*. The relevant part of the derivational structure regarding (2) looks as follows:



Drubig finds further evidence for (3) in Malay, which has structural constraints on the ordering of different types of modality and negation similar to English:

(4) a. Dia *mesti* tidak belajar  
he must NEG study

b. \*Tidak *mesti* dia belajar  
NEG must he study  
'He must not study.'  
(I am certain that he does not study.)

c. Dia tidak *boleh* belajar  
He NEG may study  
'He may not/cannot study (is not permitted/able to study).'

(Drubig 2001: 8-9)

The examples in (4) demonstrate the role the negative item plays in the grammaticality judgements regarding the ordering of epistemic and root modals in Malay derivational structure. The first two clauses contain the strong epistemic modal *mesti* ‘must’. According to the syntactic analysis in (3), it is expected that *mesti* would be placed above and outside the scope of any negative marker in the clause, and this is shown in (4a). *Tidak* is the marker of non-focused sentence negation in Malay and is below the modal. When the order is reversed in (4b), we get the ungrammatical structure.

The representation in (3) also predicts that regarding negation, root modals require directly the opposite order to epistemic ones. Whilst this will be found problematic in Czech, it is true for Malay, as (4c) shows, where the modal has a root reading<sup>173</sup> and is allowed to be in the scope of negation, i.e. to be placed below the negative marker *tidak*. The Malay example is important for Drubig’s analysis because modal verbs in Malay are not ambiguous in terms of epistemic v. root interpretation, therefore making the argumentation more straightforward.

### 9.2.2. Tense

Another syntactic category that contributes to the different syntactic realization of epistemic and root modality in Drubig’s system is tense. The analysis of tense has recently become very popular in the Minimalist Program framework. The theories of tense developed in the generative syntax are characterized by the complex

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<sup>173</sup> It does not follow directly from the examples shown here but it is still important to note that some Malay epistemic and root modals also share the same phonetic representation. E.g. our *mesti* ‘must’ can have both interpretations, which seems to give the theory more relevance. However, the problem is that we never see the proof that both orders (the one with negative below epistemic reading and the one with negative above the root reading) are mutually exclusive (they are not in Czech). This may be connected to the whole problem of word order phenomena etc.

phrasal tense system. In its simplified formulation, the tense system uses two temporal heads to express all temporal relations (such as PAST, PRESENT and FUTURE) that the clause represents.<sup>174</sup>

Drubig adopts the postulate of the two distinct functional heads bearing temporal features. One, which is called  $Z^\circ$ , is responsible for the morphological tense features realized on the verb. The other was reintroduced as the head of the original TP (hence the term  $T^\circ$ ). However, newer theories suggest that  $T^\circ$  does not realize any morphological features of the grammatical tense. Instead, it remains phonetically invisible (empty) and its prime purpose is to express a temporal relation (AFTER in the case of the past tense).

Similarly to the negation framework, the important factor in Drubig's analysis is the hierarchical relation between temporal functional head T, epistemic modal head  $\text{Mod}_{\text{ep}}$  and non-epistemic modal head  $\text{Mod}_{\text{nonep}}$ . Drubig proposes the following relation:

$$(5) \text{Mod}_{\text{ep}} > T (\text{Past})$$

The figure in (5) stipulates that epistemic modals are base-generated above Tense. This order supports the argument that epistemic modal verbs, unlike root modals, do not have access to the past tense – they are not in the domain (under the scope) of the

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<sup>174</sup> The major works in this area include Hornstein (1990), who links the denotational approach towards tense (involving terms of 'evaluation time', 'reference time' and 'speech time') to the generative framework. Zeller (1994) introduces the second temporal head  $Z^\circ$  into the phrasal analysis of tense in German. The third influential author is Stowell (1995, 1996), who argues that English tense is a dyadic temporal predicate that inherently takes two time-denoting phrases, ZP and TP. ZP is a referential time-denoting phrase analogous to DP and functioning as an internal argument of  $T^\circ$ . Stowell's syntactic account of temporal relations deals with their interaction with modality, and hence is analysed later in 9.2.

past tense, and cannot express PAST. This behaviour provides another reason why epistemic and root modals may have distinct derivations.

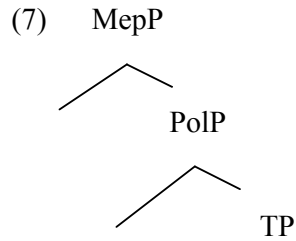
Similarly to the case of negation, Drubig draws the relevant data from a number of languages. For instance, Guyanese Creole is illustrative since it allows both epistemic and root modals to appear in one clause. In the example (6) below, the epistemic modal is above the T° containing the past temporal marker *bin*, whilst the root modality is derived below the T°.

- (6) a. Jaan shuda      bin    kyaan      get      fu      gu  
       b. Jaan **MODep PAST** MODroot MODroot COMP go  
       c. ‘Jaan should not have been able to be allowed to go.’

(Drubig 2001: 16)

Such a multimodal construction offers a clear resource for experimenting with the hierarchical relations of several syntactic categories and both modal readings. However, the contra-argument can rule the example out as probably language specific and/or highly marked. There is no further investigation of Guyanese Creole in Drubig that could shed some light on either the markedness of these structures (in which the whole word-order system can play a role) or the expected grammaticality/ungrammaticality of the corresponding structures where MODep can theoretically sit in the position below T° (PAST).

Consequently, Drubig suggests that epistemic modals have scope over tense similar to the way in which they scope over negation. The functional hierarchy has the following syntactic realization:



The question generated by (7) is how we account for the fact that epistemic modals are ‘tensed’ in the sentence just as root modals. It becomes particularly relevant for Czech, which has modal verbs with full past, present and future morphological paradigms identical to those of lexical verbs.<sup>175</sup> Drubig argues that there is a close syntactic relationship between the epistemic modality and the present tense. Given that epistemic modals are restricted from the tense domain in (7), this relationship is only possible because of the specific atemporal properties of the present tense. According to this analysis, epistemic modality is always in the present form. The situation in Guyanese Creole suggests that the position of an epistemic modal is blocked from the one of root modal by the past temporal head. In fact, the whole argument is based on the past tense structures.

However, what if the temporal head realizes PRESENT instead of past? And, does the notion of the relationship between the epistemic modality and the present tense create a problem for the hierarchy in (7), where epistemic modality is not in the scope of tenses?

Drubig addresses these questions by assuming that the present tense has the potential not to be a real tense at all. Therefore, it does not always have to express temporal relations. The temporal head in generative syntax relates to two time denotations, the event time (E) and the evaluation time (S in matrix clauses). The

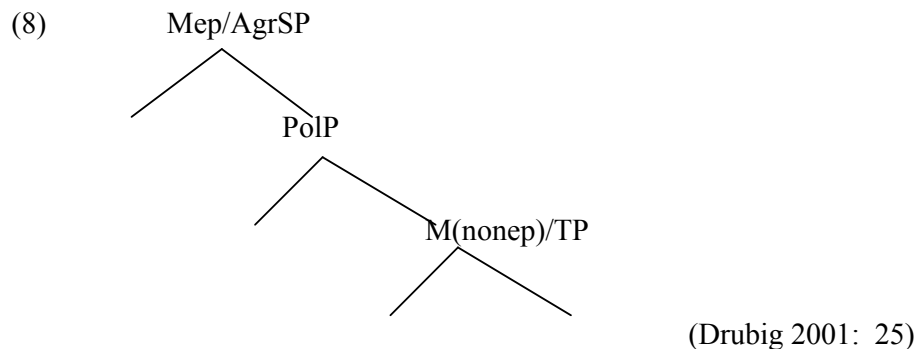
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<sup>175</sup> We saw this in chapter 3. Further discussion about the tense under modals in Czech follows in the critique of derivational analysis of root v. epistemic dichotomy in 9.4.

difference between T° (PAST) and T° (PRESENT) is that whilst the former realizes E *prior to* S, the latter simply *identifies* E with S.<sup>176</sup> When the differences between two time denotations are deleted, the temporal interpretation shifts towards the ‘tenselessness’. This process explains why the present tense can be treated in some contexts as the unmarked tense.

The assumption of a tenseless feature on the simple present tense further correlates with some observations made in semantics. Enç (1996) suggests that the present tense is semantically vacuous since it neither dissociates two time-denotations (as represented by E and S), nor binds the event argument of the verb. As such, it is the obligatory tense form of epistemic modality.<sup>177</sup>

Drubig concurs with the hypothesis that epistemic modals have a tenseless quality. The past tense is generally believed unacceptable for epistemic modals, as the Guyanese Creole example shows. When an epistemic modal occurs in a tensed sentence, the TP hosting the (past) tense morpheme is embedded in the projection headed by the epistemic modal (Drubig 2001: 24-25). This generates the following derivational structure involving both tense and negation:



<sup>176</sup> See Hornstein (1990).

<sup>177</sup> Enç (1996: 354) shows that this allows epistemic modals to occur in tenseless matrix finite sentences.



According to Drubig, nonepistemic (root) modal verbs can occur only in tensed sentences. He further assumes that they are marked [+tense]. It syntactically means that they initially have to raise to T° from the position below TP. The AgrS° is reserved for epistemic modals.<sup>178</sup> Drubig argues that all modal verbs end up in AgrS° in English, which makes root and epistemic modality mutually exclusive in the space of a single clause.

### 9.3. Stowell's tense/modality system

Stowell (1995) has proposed a phrase structure for tense based on the idea which appeared earlier in Zagana (1990) and became the leading argument in the minimalist treatment of temporal relations. Its reasoning can be described as follows: TENSE, rather than being a simple morphological feature in grammar corresponding to semantic concept of TIME, has the character of a (functional) dyadic temporal ordering predicate. It has the argument structure involving the two time-denoting phrases determined originally by Zagana as the internal VP complement and the external SpecTP complement.

Stowell proposes a new functional category ZP that intervenes between VP and TP in the temporal structure. Its status, modeled on DP, is that of a referential (time-denoting) category, functioning as an internal argument of TENSE. The structural relation between ZP and VP is similar to the relation between DP (referential) and NP (non-referential). The predicative status of T° further influences the semantics of tense. Stowell argues that it is possible to account for the semantics

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<sup>178</sup> In fact, in Drubig's system the epistemic modality and AgrS are just the alternative instantiations of the same category, which projects either AgrS or MepP. The implication for non-epistemic modals and TP is then similar.

strictly within the bounds of the dyadic predicative structure, i.e. within the relations between the ‘evaluation time’ encoded in the Spec T and ‘event time’ denoted by ZP.

Regarding modality and tense, Stowell (2004) argues that epistemic modals may not fall under the logical scope of tenses. This is caused by the tendency of an epistemic modal evaluation to be held at the utterance time, as though it were a present-tense modal only. Therefore, epistemic modality has to scope *over* the tense. Conversely, as root modals do (obligatorily) fall under the scope of tenses, they seem to be excluded from taking logical scope over the tenses.<sup>179</sup> For instance, English *could* cannot be used in the epistemic sense in the past tense structures:

(9) a. Jack’s wife can’t be very rich.

‘It is not possible that Jack’s wife is very rich.’

b. Jack’s wife couldn’t be very rich.

‘It is not possible that Jack’s wife is very rich.’

\*‘It was not possible that Jack’s wife was very rich.’

(Stowell 2004: 630)

Assuming that the preferred reading of the modal in (9) is epistemic, (9b) is ruled out due to the temporal properties of epistemic modality. The outcome is that *can* is not able to combine with the past tense in case of epistemic reading.

Stowell concludes that the role of epistemic modals with respect to tense relations in a single sentence is analogous to that of normal verbs in simultaneous sequence-of-tense (SOT) relations in multi-clausal constructions.<sup>180</sup> The epistemic modal is construed as a present-tense modal, relative to the event-time (denoted by

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<sup>179</sup> Stowell (2004: 629-630). He notes that these observations seem to be considered true only when both tense elements and modals appear in a single sentence.

<sup>180</sup> SOT shows that the sentence *John said that Mary worked for Peter* is ambiguous in terms of temporal interpretation. It can mean both that Mary finished working for Peter and that she still works for him. The latter possibility is created by the specific character of SOT relations.

ZP), such as the present tense in a higher clause is relative to the event time denoted in the lower clause in SOT.

#### 9.4. Cinque's hierarchy of functional categories

The theoretical basis for the question of why the past tense and negation should scope over root modals but not epistemic ones has also been provided in Cinque (1999). Essentially, Cinque claims that both particular types of modality have to be associated with different (functional) heads in derivational structure. The epistemic or root interpretation of a modal verb is given by the type of functional position it occupies in the hierarchical structure. The functional category giving rise to the epistemic reading is located higher in the structure than the one motivating the root reading.

Cinque distinguishes between modality and mood in accordance with the tradition represented in Palmer (1986). One aspect of Palmer's study becomes essential for Cinque's analysis: the fact that mood and modality are both a particular language's realization of the more general category. Mood is more closely related to the verbal morphology, whereas modality in Cinque's system can be represented by various independent words – verbs, auxiliaries, or particles. Nevertheless, both are treated together within the concept of functional hierarchy. According to Cinque, this hierarchy is universal. The difference between languages means that they realize specific functional categories in the hierarchy to express general meanings such as tense and modality. The vast number of data gathered by Cinque from several distant types of languages contributes to the delimitation of the general hierarchy of functional categories.

For instance, Cinque finds out that Danish involves a modal verb *kunne* ‘can’ that is syntactically neither epistemic nor root, but occupies the intermediate functional position between them in the hierarchy. The general behaviour of *kunne* resembles epistemic modals, but presents a problem for the epistemic interpretation due to the fact that it can appear in marked tense contexts, i.e. those contexts that were argued by both Drubig and Stowell to be inaccessible for epistemic modality. The following ‘tense test’ shows that *kunne* is preceded by the future marker *vil* ‘will’:

(10) a. Der vil let kunne gå noget galt.

‘It will easily be possible that something goes wrong.’

b. \*Han vil skulle have læst bogen.

‘He will be said to (must) have read the book.’

(Vikner 1988: 10)

The example (10a) contains epistemic *kunne* ‘can’ and (10b) involves epistemic *skulle* ‘must’. The functional hierarchy that has been suggested so far implies that epistemic modals are positioned above Tense. This is the case of (10b), where *skulle* cannot follow the future marker *vil*. However, *kunne* in (10a) can appear below *vil* in the structure, which is unexpected. Hence the grammaticality of (10a) points out the specific syntactic behaviour of *kunne* regarding its relation to Tense.<sup>181</sup>

Cinque proposes that this syntactic ‘peculiarity’ can be explained by treating *kunne* in (10) as neither truly epistemic, nor root. He proposes an additional functional category of *alethic modality*, which is syntactically lower than the epistemic modal projection but higher than the root modal projection. This creates the

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<sup>181</sup> Vikner (1988) further notes that *kunne* may also appear in the perfect tense. Cinque finds a solution to the problem by assuming that *kunne* is a representative of a modal functional category different from root and epistemic one. However, the solution cannot account for the situation in Czech where, for instance, all epistemic modals can appear in the past tense (see 9.4. for further discussion).

structural representation of modality as  $\text{Mod}_{\text{epistemic}} \dots > \text{Mod}_{(\text{alethic})\text{possibility}} > \text{Mod}_{\text{root}}$  (Cinque 1999: 79). Cinque follows up by arguing that there is enough data evidence to distinguish a head of alethic possibility from a head of alethic necessity. Applying the same principle, he further recognizes several distinct heads of the root modality. Putting all other functional categories appearing in the general hierarchy aside, Cinque suggests the following order of modal projections:

$$(11) \text{Mod}_{\text{epistemic}} \dots > \text{Mod}_{\text{necessity}} > \text{Mod}_{\text{possibility}} > \text{Mod}_{\text{volition}} > \text{Mod}_{\text{obligation}} > \text{Mod}_{\text{ability/permission}}$$

(Cinque 1999: 81)

In general, the rich language data provide the evidence for assuming that the ‘traditional’ distinction between epistemic and root modality correlates with the ‘structural distinction’ (Cinque 1999; chapter 3). Similarly to Drubig, Cinque claims that epistemic modals are located higher in the structure than root modals, and that this has an implication for the functional hierarchy.

#### 9.5. Against root v. epistemic at the level of overt syntax in Czech

Whilst the derivational approach towards the modal interpretations investigated in this chapter involves a number of valid arguments, mostly related to the scope relation between modality, Tense and negation, the argumentation is misconceived. There are problems created by the assumption that the scope affects the structural representation. I will identify some more serious difficulties with respect to the Czech modal system, and show that most of them would be easily avoided by treating the scope properties relevant for epistemic v. root distinction as a LF issue.

### 9.5.1. Negation in Czech modal structures revisited

The first problem with negation in Czech is that it involves Negative Concord (NC), i.e. co-occurrence of negative markers and negative polarity items in the single clausal structure. Hence it does not reflect the logical negation grammatically as the languages without NC (English) do. The difference between NC languages and non-NC languages has not been specifically illustrated within Drubig's system, so we have to leave open the possibility that it may have an impact on his main argument. In other words, I suppose that the complexity of negation in Czech plays an important role in the relation between different modal interpretations and negation.

I have shown in chapter 3 that Czech negation has to be licensed by the negative marker in the form of the prefix *ne-*:

- (12) a. Jan *ne*četl *nikdy žádnou* knihu.  
Jan NEGread3SgPast NEGnever NEGnoneAcc bookAcc  
'Jan hasn't ever read any book.'
- b. \*Jan četl *nikdy žádnou* knihu.  
Jan read3SgPast never noneAcc bookAcc  
'Jan hasn't ever read any book.'
- c. \*Jan *nikdy* četl *žádnou* knihu.  
Jan never read3SgPast noneAcc bookAcc  
'Jan hasn't ever read any book.'

The data in (12) represent NC in Czech. (12a) is a well-formed structure since the 'final' negation is properly licensed by the presence of the prefix *ne-* on the verb *četl*

The licensing rule creates an important phenomenon in modal CVDs. The negative prefix *ne-* can be attached to both the modal verb and its infinitival complement, as seen in the data (13) below. This has a crucial impact on the epistemic v. root interpretation.

- If we follow Drubig (2001), the epistemic modality should always scope over the negation. Consequently, the negation of the modal *moci* ‘can’ in (13a) should make the epistemic interpretation impossible. This is, however, not the case. Moreover, the situation in (13b) is also crucial for our counter-argument. The negative prefix *ne-* can be attached to the lexical verb *číst* ‘read’, with the same consequences for the licensing of negation as in (13a). The negation has lower scope than it had in (13a). The positional relation between negation and modality in (13b) does not rule out the root reading either, which is surprising given that according to Drubig and Cinque, root modals have to be below negation in the structure.

I propose that (13a) and (13b) show that the epistemic v. root disambiguation does not result from the syntactic derivation, but has to be referred to the level of Logical Form. There is no way to syntactically force the epistemic reading as being the only possible interpretation of the modal in (13b), or the root reading to be obligatory in (13a).

In general, the principle of both multiple and ‘free’ negation results in structural difficulties regarding the derivation of negation in Czech. The question is whether there is a syntactic phrasal position for base-generated negation in modal structures at all, and how it can account for NC phenomena. Both possible answers, i.e. that either there is a multiple insertion of negative items or that some complex movement hypothesis has to be employed to explain the final structure, are highly disadvantageous due to reasons of parsimony. Moreover, if the movement of the modal over the negation was allowed in (13a), it would cancel the unacceptability of the epistemic interpretation. However, I cannot think of any situation where the epistemic reading is possible.

Next to the theoretical problem, there is an empirical difficulty caused by the observed fact that the infinitive complement of a modal can be freely negated by the prefix *ne-*. In those cases, negation is still licensed even though the negative marker appears low in the structure. Crucially, the structure in (13b) involving the lower (narrow scoping) negation is still ambiguous in terms of epistemic v. root. Hence a negative marker can appear below the modal regardless of its reading. This makes the derivational approach towards the scope properties of modal interpretations significantly weaker.



### 9.5.2. Tense in Czech modal structures

The relation between modality and Tense creates a different problem for the derivational approach. The main argument here is that Czech epistemic modals can appear in the past tense form, creating a situation similar to that leading Vikner and Cinque to question the epistemic status of Danish *kunne* ‘can’. However, the difference between Danish and Czech is that the latter allows all epistemic modals to appear in the marked past tense structures:

- (14) Jan měl/musel/mohl            před měsícem vyloupit banku.  
Jan have/must/can3SgPast before month robInf bankAcc  
'Jan had to/could rob a bank a month ago.' root  
'It is likely/necessary/probable that Jan robbed a bank a month ago.' epistemic

As observed in chapter 3, modal verbs in Czech have the full past, present and future tense paradigms. The derivational approach suggests that the epistemic modals are derived above Tense (TP) and therefore cannot appear in any tense form other than the unmarked (generic) present. However, the modals in (14) assume the past tense form, and yet both modal interpretations are still available.<sup>182</sup>

This does not mean that the epistemic modality is in fact temporally bound. I agree that the epistemic interpretation scopes above Tense, but argue that scope positions cannot be derived in the overt syntax. If they were, there is a question of why the epistemic interpretation would be allowed by structures like (14), where the modal is overtly in the domain of Tense. It is more straightforward to assume that the

<sup>182</sup> The epistemic reading is more straightforward in the case of *mīt* 'have to', but is reconstructable in *muset* 'must' and *moci* 'can'.

epistemic modals remain under TP in derivational syntax and achieve their atemporal scope later by the movement to the individual scope positions at LF.<sup>183</sup>

### 9.5.3. Fixed universal hierarchy of functional heads – argument of parsimony

There are two main theoretical arguments that can challenge Cinque's functional syntactic framework. The first one is related to the unavoidable selectiveness of data analysis. Even the comparative research presented in Cinque (1999), which contains an impressive amount of data, cannot afford to go into details concerning individual languages. It is because of the amount of examples chosen to support his theory that Cinque's argumentation is necessarily forced to be very selective. The problem with this approach is that whilst it brings seemingly enough positive evidence, it is lacking in a convincing elimination of the negative evidence.

The second argument is related to the issue of parsimony. The research presented in this thesis maintains a position that is critical towards the introduction of additional functional categories into syntax. In general, I assume that it is more advantageous not to extend the number of phrasal categories in the derivational component unless it is absolutely necessary. This assumption underlines our treatment of semi-lexicity found in the Czech verbal domain.

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<sup>183</sup> Joe Emonds (personal communication) has also pointed out that epistemic modals in English are not 'tenseless'. This is evident in 'Modal+have' constructions such as *John may not have done that*, which always have an epistemic interpretation. This indicates that regardless of their forced semantic reading, English modals are in fact in the domain of T. The difference between English and Czech in terms of tense and modality is that English so called 'past modals' (*would, could*) are in fact not modals at all. In contrast, the rich morphological paradigms of modal verbs in Czech allow them to appear in the past.

#### 9.5.4. Preferred reading – problems with disambiguation in syntax

As with the lexicalist hypothesis discussed in the previous chapter, the availability of modal disambiguation in Czech creates a substantial problem for the derivational approach to root v. epistemic dichotomy. I suggest that the biggest challenge for the derivational approach is to demonstrate how derivational (overt) syntax can explain several types of epistemic v. root disambiguation.<sup>184</sup> In other words, the derivational approach becomes problematic in the situation when the ambiguity of root/epistemic is seriously considered.

Firstly, I have shown that not all modals are +EPISTEMIC. The role of this feature in the modal semantics proposed in chapter 7 implies that Czech modals are primarily root modals and some of them are able to gain a secondary epistemic interpretation next to the primary one.

Secondly, the disambiguation of phonetically identical modal verbs with both epistemic and root readings cannot be satisfactorily accounted for by either a lexicalist or a derivational approach. The lexicalist approach proposes disambiguation by double lexical entries, which creates a difficulty for the acquisition of modal verbs. If the root v. epistemic dichotomy is indeed already encoded in the lexicon in the form of two separate entries, there is no significant reason for it not to be represented by two different phonetic realizations either. In other words, there is no apparent need for any ambiguity. The derivational explanation avoids the problems of lexical ambiguity and language acquisition. However, it does not explain why some contexts in which a modal can appear cancel the syntactic ambiguity of sentences such as (15):

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<sup>184</sup> Some of them, such as modals selecting I-level predicates and involving certain temporal adverbs, are discussed in the conclusion to chapter 8.

- (15) Jan musí být v knihovně.  
 Jan must3SgPres beInf in library  
 ‘Jan is obliged to be in the library.’ *epistemic*  
 ‘It is a necessary assumption that Jan is in the library.’ *root*

There are no elements in (15) that would favour one of the readings, forcing the disambiguation of *muset* ‘must’. Both interpretations are equally acceptable.

The disambiguation process leading towards a preferred modal interpretation in (15) has had but marginal attention in the literature.<sup>185</sup> However, whilst phonetically identical modals can be ambiguous, this ambiguity cannot be called ‘symmetric’. In other words, the cases where one of the modal readings is somehow favoured seem to be much more common than those with two completely unmarked candidates. The status of preference in epistemic v. root dichotomy in many cases relies on semantic and pragmatic judgements, as well as judgements motivated extralinguistically, involving the expectations of individual language users. These expectations include a common view-of-the-world and general knowledge shared amongst the speakers.

The typical example of modal disambiguation made on these grounds is the employment of the primarily semantic distinction between I(individual)-level v. S(stage)-level predication.<sup>186</sup> The strong disambiguating properties have been found in the infinitival complements of modals with the I-level status. Barbiers (2002b) points out that when the individual level predicate becomes the complement of a modal, it can significantly affect the whole interpretation of modality.<sup>187</sup> The

<sup>185</sup> See Barbiers (2002) for a summary of views.

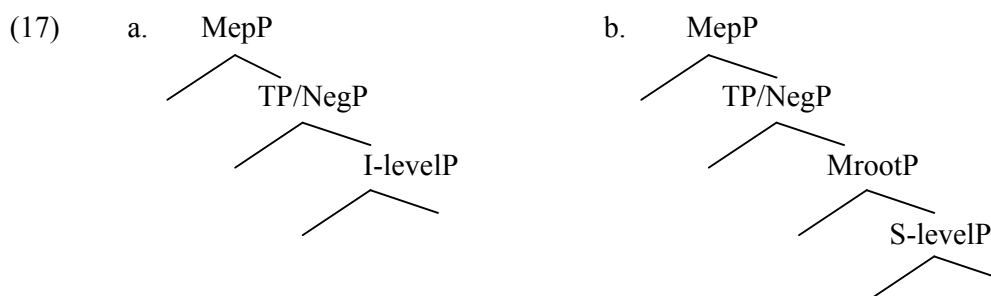
<sup>186</sup> It was also discussed in chapter 8.

<sup>187</sup> This is due to the fact that I-level predicates entail genericity (Chierchia 1995). An example of a generic meaning is a scientific statement of the type ‘Whales are mammals’. Once discovered, the truth of such sentences holds unconditionally. The generic status of I-level predicates coincides with the principle of atemporality. Since the atemporal meaning can be found only in the present (unmarked)

following example shows the disambiguation of the TMV *muset* when having the I-level complement.

- (16) Jan musí být z Prahy.  
 Jan must3SgPres beInf from Prague  
 ‘I assume (using my knowledge of Jan’s origin) that Jan is from Prague.’<sub>epistemic</sub>  
 \* ‘Jan is obliged to be from Prague.’<sub>root</sub>

In (16), the combination of the modal and I-level predicate blocks the root interpretation of the modal. Crucially, the derivational approach needs to capture this character in the syntactic structure, which is a difficult task. According to this approach, ambiguous modal sentences should yield either two different syntactic derivations at the same time or one complex derivation with both positions for the modal present. This is true for S-level predicates. However, the involvement of I-level predication makes only the epistemic derivational position of the modal available. The situation is represented in (17):




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tense, the structures with I-level predicates generally resist the past/future tense form and/or additional temporal adverbs:

- (i) \*Jan byl minulý týden z Prahy.  
 Jan Aux3SgPast last week from Prague  
 ‘Last week, Jan was from Prague.’

Interestingly, the atemporal behaviour of I-level predicates resembles epistemic modality. The semantics of the epistemic modality retains the atemporal quality, and is similar to that of I-level predicates. This has consequences for the modal CVDs containing the I-level infinitival complements of the modal.

It is questionable whether the I-level disambiguation involved in the example (16) above can be syntactically accounted for by the introduction of (17). However, it is the only possible way consistent with the derivational approach: if the epistemic/root ambiguity was indeed a syntactic phenomenon, the I-level disambiguation (similarly to Tense/Negation disambiguation) should be accounted for at the level of overt syntax as well.

Our main argument against this is that I-level predicates are defined semantically, and that they lose their status by the application of additional pragmatic context. Musan (1995) shows several context situations that enable I-level predicates to behave as S-level predicates.<sup>188</sup> The pragmatic contexts have a large impact on the analysis in (17), since it cancels the hypothetical syntactic difference between (17a) and (17b).

## 9.6. Summary and conclusions

We have seen that the theories treating root v. epistemic dichotomy as derived in the overt syntax introduce two separate phrasal projections into the syntactic structure, MepP and MrootP. The main argument in favour of these projections was that they are divided by Tense and negation in the structure. Since epistemic modality scopes over Tense and negation, epistemic modals were argued to project MepP above TP and NegP respectively. Root modal verbs, on the other hand, were considered to be in the domain of both Tense and negation.

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<sup>188</sup> It was demonstrated in chapter 8 that some of them apply to the modal CVDs in Czech as well. In a situation of a social game or drama, a person can choose characters with different origins. The root modal interpretation of *Jan musí být z Ameriky* ‘Jan must be from America’ is perfectly acceptable when Jan is the last one to pick a character to play, that the remaining character’s origin is America, and Jan does not like to be associated with America.

My objection to this approach is that it is neither necessary nor feasible for Czech modal structures. I have demonstrated that whilst epistemic modality has an atemporal and generic character, beyond doubt scoping over Tense and negation, both epistemic and root modals in Czech are inserted into the single syntactic position. This position is within the domain of Tense (epistemic interpretation in Czech is achieved in Past as well as unmarked Present tense structures<sup>189</sup>) and either below or above Negation, depending on whether it is the modal that takes the negative prefix *ne-* or the infinitival complement (root modals in Czech can also occur outside NegP when the infinitive is negated). Hence the Czech data demonstrated that the root or epistemic disambiguation is not visible at the level of overt syntax.

To conclude, I propose to take a **scope-based** rather than **structure-based** approach to the root v. epistemic ambiguity. The inconclusiveness of tests involving the relation between modality and Tense/negation in Czech shows that the scope approach is indeed more appropriate. The proposal is to be made that the difference between epistemic and root modality can be resolved later at the level of Logical Form. There are no reasons in Czech grammar why we could not treat the root v. epistemic dichotomy at the level of Logical Form. In fact, this would be done with more effectiveness regarding the ambiguity of modal interpretations.

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<sup>189</sup> We have already noted that the past tense structure is obligatory for the epistemic reading in the case of the TMV *mít* 'have to':

- (i) a. Jan měl vyloupit tři banky  
 Jan have3SgPast robInf three banksAcc  
 'Jan was obliged to rob three banks.' *root*  
 'It is an assumption that Jan robbed three banks.' *epistemic*
- b. Jan má vyloupit tři banky.  
 Jan have3SgPres robInf three banksAcc  
 'Jan is obliged to rob three banks.' *root*  
 \*'It is an assumption that Jan robs three banks.' *epistemic*

## Chapter 10

### *Root v. Epistemic derived at Logical Form*



### 10.1. Introduction

The previous two chapters explained most of the inconveniencies of treating the dichotomy between epistemic and root modality as either a Lexicon element existing prior to the syntactic insertion, or an element of the derivational process.

The first option, which I call ‘lexicalist’ in allusion to Chomsky (1970), encountered the main problem in the sense of language acquisition. I have suggested that the expansion of the Lexicon by pairs of homophonic modal predicates does not lead to a feasible account of how modality is acquired by native speakers. In addition, some more theoretical difficulties were created in the process of considering epistemic modal predicates as strictly ‘raising’ predicates and root modal predicates as those having the ‘control’ status.

The second, ‘derivational’ option has been dismissed mainly on the basis that it created two substantially different syntactic structures for modality, according to whether characterized as epistemic or root. In this sense, it contradicted our proposal of a unifying syntactic account of Czech modals as members of the CVD. I have shown that the main arguments regarding the supposedly distinct hierarchical positions of epistemic and root modality in respect of Negation and Tense in the clause are found to be lacking in Czech and that this supports the unifying hypothesis.

In this chapter, I will follow up the argumentation by assuming that the only possible place for dealing with the root v. epistemic dichotomy is the level of Logical Form. The final theory draws from Butler’s (2003) approach to modality that merges the modal semantics we dealt with in chapter 7 (Kratzer 1991, Brennan 1997) with the idea of the phase status in the syntactic derivation (Chomsky 2001). I will argue that

the following crucial points contribute to the theory of LF characteristics of the root v. epistemic dichotomy.

The core of our argumentation is that the distinction is primarily semantic. Thus we speak of the different readings of modal verbs, rather than different modals themselves. The distinct semantic properties of root and epistemic readings are achieved by variations in their status as quantifying operators, initially pointed out by Kratzer (1981, 1991). Consequently, I propose that there are two scope positions for modal verbs in Czech, the one yielding a wider scope over the whole clause, and the one with a narrower scope over the predicate. The former is syntactically associated with the higher position within CP, the latter with the lower position above vP.

All modal verbs take propositions as arguments. I have established that modals in Czech are in the head of vP. Since they quantify (scope over) propositions, I propose that this makes them raise just above the vP to get their root reading and above the TP to attain epistemic reading at LF. I will call this a LF hypothesis, and assume that it enables us to consider the root v. epistemic dichotomy an LF phenomenon, not affecting the syntactic account of Czech modal structures presented earlier. Accordingly, I propose that Czech modals cannot gain epistemic interpretation prior to the Logical form.

## 10.2. Further evidence for the LF hypothesis

The relation between modality and the sentence subject supports the analysis of the root v. epistemic dichotomy as being encoded at LF. McDowell (1987) first pointed out the relevance of the Logical Form for the root v. epistemic dichotomy, with root modals appearing in VP and epistemic ones in C at LF. One of the most important

properties that distinguishes root modality from the epistemic modality at LF is the status of scope relative to the subject of the sentence.

### 10.2.1. Scope and subject in modal structures

McDowell (1987) shows that modals interact differently with the subject according to their root or epistemic interpretation. In short, LF yields a hierarchy where epistemic modality scopes over the subjects, which in turn scope over the root modality. This is principally correct for all types of subjects having canonical scope.<sup>190</sup> Butler (2003) points out that the role of the subject in the scope hierarchy involving root and epistemic readings is more complicated if we deal with the indefinite subjects that do not have canonical scope properties. The complication is created by the semantic ambiguity of bare plural indefinite subjects paired with the primarily temporal (S-Level) predicates.<sup>191</sup>

The generic/existential ambiguity implied by the indefinite subjects reflects their scope. Whilst generic interpretation yields the higher scope of a subject in SpecTP, the existential interpretation creates a lower scope in SpecvP (Butler 2003: 981). Since the scope position for root modality is above vP at LF, the latter example allows the root modals to scope over the subjects. This in turn has consequences for the relative semantic order of epistemic/root modality and the subject:

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<sup>190</sup> The canonical scope position of subjects is SpecTP (Butler 2003).

<sup>191</sup> The indefinite subjects such as *Philosophers* in the sentence *Philosophers are old* can have both generic and existential meaning. The predicate 'to be old' is primarily S-level, but when the sentence receives a generic meaning, it tends to be understood as an I-level predicate. Therefore, the generic meaning states that 'to be old' is true for all philosophers. In other words, if someone is a philosopher he/she is old. On the other hand, the existential meaning says that there is a particular philosopher and that he/she is old. The generic status is more easily achieved with certain types of predicates and less easily with others, with the subject playing an important part in the ambiguity.

- (1) a. Some philosophers must go to those seminars.  
b. ‘Quine, Carnap, and Socrates are required to go to those seminars.’  
c. ‘It is required that some philosophers go to those seminars, as a condition of our being given money to run them.’

The example (1) demonstrates that the modal ‘must’ with root reading can scope both below and above the subject. In the case of the former in (1b), the indefinite subject *some philosophers* has a quantificational meaning expressing a situation that there is a certain group of philosophers that is obliged to go to specific seminars. In the case of the latter in (1c), the root modal takes the wider scope above the indefinite subject that has a non-quantificational (existential) meaning. The interpretation in (1c) implies that in order for the seminars to proceed, it is required that some philosophers attend them, regardless of who they are.

Consequently, the previous assumption regarding the scope position of root and epistemic modals relative to the sentence subjects has to be modified to incorporate those cases where root modality can scope over the subject. Butler (2003: 981) argues that root modals should scope lower than a bare plural subject when it is interpreted as quantificational, and higher when it is interpreted as non-quantificational. Nevertheless, the original assumption that scope properties of modal verbs vary according to their interpretation can be maintained.

Although there is not a clear indication of which subjects can be called ‘indefinite’ or ‘bare plural’ in Czech due to the absence of articles and the different role of determiners in general, Czech behaves similarly to English in respect of the difference between the generic and existential status of subjects.

### 10.2.2. Modals as propositional operators

The semantic status of Czech modal verbs as operators that scope over propositions was discussed in chapter 7. The unified theory of modality proposed there suggests that all modal verbs are propositional operators at LF. Hence the semantic analysis presented in chapter 7 expands our syntactic theory of modality in Czech by the level of Logical Form. The LF hypothesis can be linked to the theory of phases, which are treated as the propositional units in minimalist syntax (Chomsky 2001). This linkage plays a central role in our argumentation.

The main principle of the LF hypothesis is that the epistemic and root readings of Czech modals are derived at LF. Epistemic modals move higher in the LF structure to scope over the subject and predicate. Root modals generally stay lower below the subject. It has been established that Czech modal verbs are not predicates themselves but function with their infinitival complements as part of a syntactically complex vP predicate. The vP projection contains modal verbs without any semantic interpretation. To get either root or epistemic interpretation, a modal has to move out of the vP at LF. The fact that modals under both interpretations undergo movement coincides with their shared semantic property of being propositional operators.

### 10.3. Phases and modality

What the LF positions of modals are and how they ensure that the modal verbs scope over propositions is explained by adopting the syntactic account of phases. The following section deals with the phenomenon of derivation-by-phase in modal structures more closely.

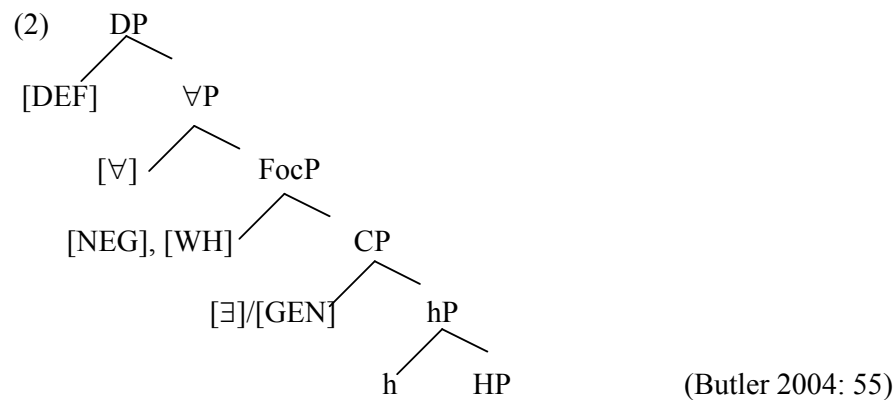
### 10.3.1. Phasal elements of the clause

It is a known fact that large syntactic units show similar structural patterns. For instance, DP has been perceived as very similar to CP (Abney 1987, Butler 2004). Another parallel has been drawn in the temporal domain, where ZP (Stowell 1996) is structurally related to vP in the same way as DP is to NP. The existence of these ‘subclausal building blocks with parallel properties’ (Butler 2004: 2) has led to further development of the notion of ‘phases’ introduced in Chomsky (1999). The concept of phases is not entirely new in syntax. In general, a phase corresponds to the earlier term ‘cycle’. Traditionally, generative grammar recognized NP and S as cycles. VP (predecessor to vP) as a third cycle was added in Chomsky (1986).

The structural patterns found in phases always involve a functional element dominating a lexical element, regardless of it being a type N, T or V. According to Chomsky (1999), the hierarchical structure of a phase has the form of  $[_{FP} F-[_{LP} \dots L \dots]]$ , where F stands for ‘functional’ and L ‘lexical’. Importantly, it also has to involve the information regarding its propositional character. The propositionality of a phase is defined in Chomsky similarly to the phenomenon of Complete Functional Complex (CFC), present in the Government & Binding Theory (Chomsky 1986). It implies that D-N (DP), v\*-V (vP) and C-T (CP) are phases. Regarding their propositional status, CP and vP are strong phases, whereas DP is the weak phase. The concept of a strong phase is important for our account in one particular respect: the head of a strong phase allows the successive movement to and through the edge (Spec) of a phase. Therefore, considering that modal vP in Czech is a phase, this explains the possibility of the modal moving from the head of the vP at LF.

### 10.3.2. The phase layout in modal structures

Chomsky further develops this basic notion of phases in recent studies (Chomsky 2004, 2006 and 2007).<sup>192</sup> However, the modal analysis presented here converges with Butler's (2004) proposal of a new, rather different theory of phases that defines the phase in terms of layers of hierarchically ordered functional heads. The core of his theory is formed by the assumption that all phases share a common, CP ordered functional structure. This structure is determined by layers of phrasal elements with quantificational properties and is represented in (2) below:



(2) shows the general layout of a phase as the basic building block of the derivation. The h/H variable refers to the lexical core of the phase. The category C has a specific character making it the functional edge of any phase. In other words, CP generally precedes the lexical core of a phase regardless of its realization. Hence (2) does not

<sup>192</sup> The notion of Phases in the minimalist program, their substance and the role that they play in the theory have all become attractive issues widely discussed in recent minimalist literature, as documented by new PhD dissertations on the topic (Slioussar 2007, Khomitsevich 2008). We do not have the space here to join the discussion, and since, as already stated, our conception of phases has shifted from Chomsky's reasoning more towards Butler's (2004) proposal, it would also be counter-productive to do so.

predict a CP phase as distinct from the vP or DP phase. Instead, the lexical core category (T, V, and N) becomes the defining element of the phase in (2).

Such structural realization of a phase offers a tighter definition of a fundamental grammatical unit in the derivational process and characterizes the cyclicity of derivation in a more effective way. In short, it gives Butler a less stipulative approach to phases, deriving a V phase ( $C > v > V$ ), a T phase ( $C > t > T$ ) and an N phase ( $C > n > N$ ). V phase corresponds with the standard vP phase, T phase is the original CP phase and N phase corresponds with the traditional DP phase. The cyclicity of the syntactic derivation is an expected, rather than a stipulated property of the system. The advantage of this assumption is that we can avoid any ad hoc stipulation of a rule that would define the specific role of a phase in the syntactic system.<sup>193</sup>

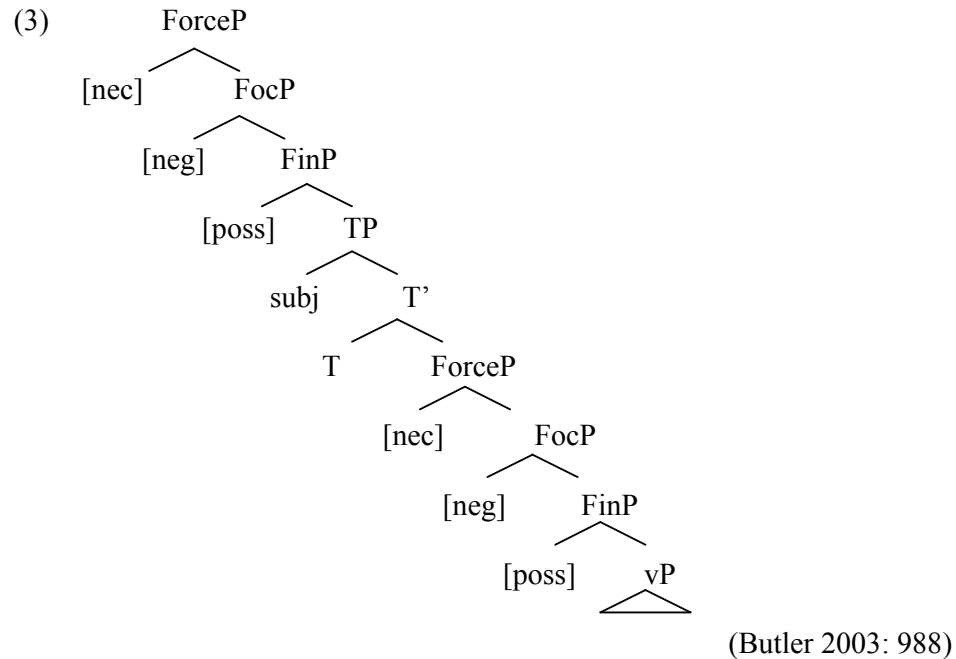
Typically, any basic tensed clause is derived by the succession of two phases represented in (2) above. Such a phase layout is advantageous for capturing the modal relations since it involves a number of functional positions on the phase edge that have quantificational properties. Therefore, it is compatible with Kratzerian modal semantics that assumes the quantifying abilities of modal verbs.

Butler (2004: 55) proposes that the functional layer preceding the lexical core of a phase maps to a standard CP decomposition analysis of Rizzi (1997):  $\forall P = \text{ForceP}$ ,  $\text{FocP} = \text{FocP}$  and  $\text{CP} = \text{FinP}$ . Importantly, the different modal interpretations are determined according to the way in which modality interacts with the functional edge of the phase. The structural representation of this process is captured in the following way:

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<sup>193</sup> The Phase Impenetrability Condition of Chomsky (2000) comes to mind here. The theory of modal interpretation argued for in this chapter presumes that phases are in fact penetrable at the level of Logical Form.





The tree in (3) represents the basic tensed clause containing two phases, T and V. The full structure of Rizzi's decomposed CP is repeated immediately above vP. I adopt Butler's proposal that the functional layer of T phase is the domain of epistemic modality, whereas the edge of the V phase is the domain of root modality. In both cases, (3) assumes that negation intervenes between necessity and possibility.

This structure has a clear advantage over its alternatives in capturing several of the modal relations we have discussed so far in chapter 10. Given the traditional clause hierarchy CP > TP > NegP > vP > VP, root necessity has been established to scope in T. We have seen this in 10.2.1. where some types of subjects contributed to the split of root modality into higher scoping root necessity and lower scoping root possibility. Similarly, root modals were shown to scope above negation in the same way as epistemic modal verbs in 9.5.1. This is also reflected by the phase model in (3) above. Now supposing that every modal is an operator scoping over the proposition-like syntactic unit, we need an additional projection XP between NegP and vP that

could host the root possibility.<sup>194</sup> This seems straightforward, but creates questions regarding the syntactic status and validity of the proposed XP. However, the problem can be avoided if we assume the phasal approach in (3). The inner structure of TP and vP phase in (3) involves enough inherently defined functional layers to account for all modal variations without the need to introduce additional projections.<sup>195</sup> The result is a tight structure with well defined and explicit positions for necessity, negation and possibility layers. Moreover, there is also a favourable correlation between the structure hierarchy involved in root modal interpretation and that of the epistemic modality.

Accordingly, Butler (2003: 986) reconstructs the clausal hierarchy at LF in the following way:

- (4) epistemic necessity > (negation) > epistemic possibility > (strong) subject  
 > root necessity > negation > root possibility > vP

The situation in (4) resembles Cinque (1999). However, the main difference is that the hierarchy in (4) is understood specifically as an LF representation. I propose to adopt the phase model in (3) and (4) for the analysis of root v. epistemic dichotomy in Czech at LF. The two main phases within the Czech modal structures are TP and vP, and modal interpretation is achieved when the modal verb moves to any appropriate position at the functional edge of TP (epistemic reading) or vP (root reading) at LF. In other words, the modal verbs are initially inserted low in v° at the level of overt syntax, and then undergo an equivalent of the LF movement to gain their semantic interpretation on the periphery of the two main clausal phases.

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<sup>194</sup> Butler (2003: 988)

<sup>195</sup> Note that (3) represents an LF model, i.e. the covert syntax structure, invisible at the level of overt syntactic derivation.

#### 10.4. Application of the phase model in Czech modal CVDs

(5)

ForceP

[epis] FocP

[neg] FinP

[epis] TP

subj T'

T ForceP

[root] FocP

[neg] FinP

[root] vP root scope domain (1<sup>st</sup> phase)

CP (= epistemic scope position)

epistemic scope domain (2<sup>nd</sup> phase)

CP (= root scope position)

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The structure in (5) differs from Butler (2003) in a few crucial points. Most importantly, I understand the functional CP layer to be strictly LF material, i.e. visible only at the level of the Logical Form.<sup>197</sup> There are several interconnected reasons for this approach.

Firstly, I assume that the role of the decomposed CP functional layers in (5) is to realize the complex of scope relations in the sentence. Since we treat scope as a purely semantic phenomenon, there is no reason to have ForceP, FocP and FinP<sup>198</sup> prior to LF.

Secondly, there is no reason to distinguish between epistemic necessity and epistemic possibility (as well as root necessity and root possibility) with regard to the scope character of both the epistemic and the root interpretation. Given the system we are developing here, it is important to see ‘necessity’ and ‘possibility’ as additional semantic properties represented by the existence of the +/- NECESSITY feature (as suggested in chapter 7). However, I do not suppose that, for instance, modal necessity differs from modal possibility in terms of scope properties in Czech. The main argument in favour of this assumption is that none of the Czech modals is ambiguous in terms of necessity v. possibility, and therefore cannot support further LF split of modal projections in the same way the root v. epistemic ambiguity could. In other words, it is much more feasible to assess necessity and possibility as properties of a ‘pure semantics’ rather than LF.

The LF structure in (5) above is suitable to explain how modality interacts with negation in Czech. In general, there are two scope positions for negation at LF in FocP: the higher one in the epistemic scope area (yielding what has been known as

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<sup>197</sup> Hence, the identical patterns found in the phase model are not manifested by syntax alone, but are recognizable as a matter of syntax-semantic interface. The LF approach also avoids the problems arising from the presence of two CP-like structures in the derivation of a single clause.

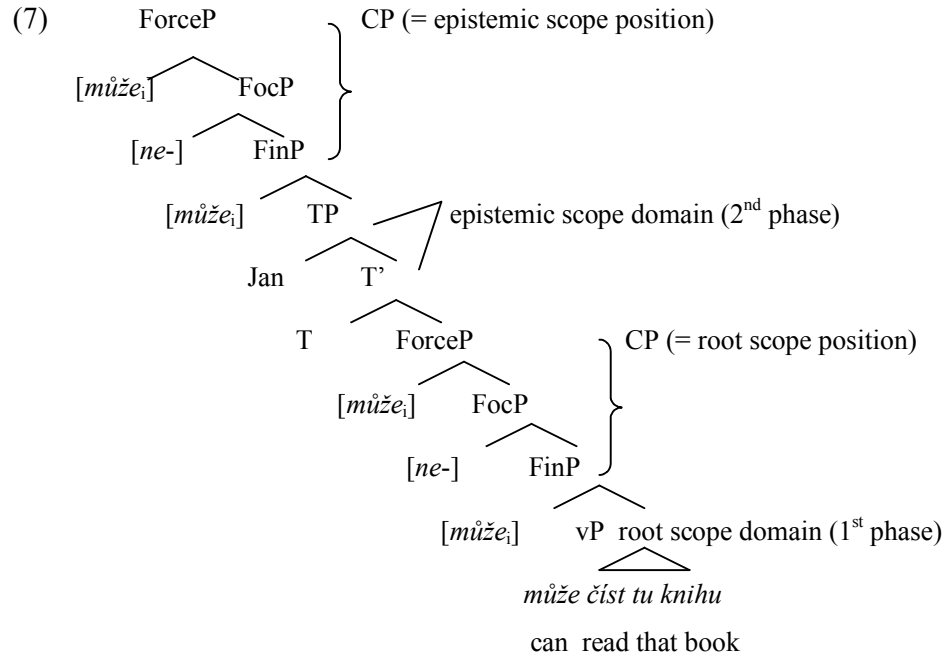
<sup>198</sup> Unlike Rizzi (1997), I do not consider ForceP, FocP and FinP to be morphological.

sentential negation) and the lower one in the root scope area (verbal negation). In addition, both the former and the latter can scope above and below the modal. Therefore, there are four scope positions for negation relative to modality at LF in Czech, above and below the epistemic modality and above and below the root modality.

This is demonstrable by the fact that both the modal and its infinitival complement can be negated, regardless of the semantic interpretation:

- (6) a. Jan **nemůže** číst tu knihu. EP/ROOT  
 Jan NEGcan3Sg readINF that book Acc  
 ‘Jan cannot read that book.’
- b. Jan může **nečíst** tu knihu.  
 Jan can3Sg NEGreadINF that bookAcc EP/ROOT  
 ‘Jan cannot read that book.’

In (6), *moci* ‘can’ is ambiguous in terms of its interpretation. It can have both the higher (epistemic) scope and the lower (root) scope. Nevertheless, the example was originally used to demonstrate the ability of the negative prefix *ne-* to be attached either to the left of the modal or to the left of its infinitival complement. This explicitly demonstrates the reason for having the four relative scope positions of negation at the level of the semantic interpretation. Accordingly, (6) predicts the following LF structure:



Given the structure (7), our example in (6a) is represented by the modal raising from the vP to the FinP in the epistemic scope area if it has the epistemic interpretation and to the FinP in the root area if it has the root interpretation at LF. On the other hand, (6b), where the negation scopes below the modal, is achieved by the modal raising to the ForceP in the epistemic area to get the epistemic reading and to the ForceP in the root area to get the root reading.

In all cases, the modal *moci* ‘can’ is inserted into  $v^0$  in the overt syntax prior to the operations at LF. The difference between ForceP and FinP relative to the negative item *ne-* is responsible for the easily perceived semantic distinction between *Jan nemůže číst tu knihu* ‘Jan is not able/permited etc. to read that book’ and *Jan může nečíst tu knihu* ‘Jan is able/permited not to read that book’. It also accounts for the fact that these two sentences do not express symmetric semantic properties: the fact that Jan is able/permited to read the book does not imply that he can afford (by being able or permited) not to read it. Therefore, ForceP is not derived from FinP and vice versa: there is a clear semantic distinction between both modal LF positions.

It is important to note that (7) shows a LF structure hierarchy that captures the complex of scope relations after the whole clause has been syntactically derived.<sup>199</sup> To conclude, our investigation of the epistemic v. root dichotomy in Czech modal structures shows the following results: Modal verbs remain syntactically identical in every aspect prior to the processes at LF. They are inserted into the derivation in the  $v^\circ$ , where they form the verbal compound (CVD) with the infinitival lower V to attain the full argument structure. This projects as  $vP$  and forms the first phase of syntactic derivation. Modals later undergo head-to-head movement to gain temporal properties and form the second phase – TP. At the level of Logical Form, a modal verb moves to the left of the  $vP$  to achieve the root interpretation and to the left of TP to achieve the epistemic interpretation.

#### 10.5. Summary and conclusions

In this chapter, we have discussed the root v. epistemic dichotomy as being derived from the scope relations created by the movement at LF. This explanation is in accordance with the syntactic system argued for in the thesis. It has been shown in chapter 6 that Czech modal verbs are syntactically derived in a uniform way regardless of their root or epistemic interpretation. They are semi-lexical verbs, inserted in the  $v^\circ$  as their natural syntactic position. The CVD is projected as  $vP$  structure with modals (when present) playing the central role.

From this point of view, the traditional emphasis on root v. epistemic dichotomy found in the majority of theories of modality in language proved to be

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<sup>199</sup> This also includes the potential head-to-head movement from  $v^\circ$  to  $T^\circ$  to gain temporal affixes etc.

disadvantageous to our syntactic system. In contrast to the traditional view, we put an emphasis on what is the common ground of both modal interpretations.

I propose that ‘root’ and ‘epistemic’ are both derived (secondary) properties of modal verbs in Czech. They are both properties of the same kind, best explained within the Kratzerian semantic model as resulting from the changes in the relation between the ordering source and the modal base.<sup>200</sup> The primary semantic property of modal verbs is their ability to quantify over the sets of possible worlds, and this also constitutes the *+mod* feature. The individual modal interpretations are realized by the different sets taken into account. In other words, modals always attain the semantic ability to scope – its realization at LF is what gives rise to the root v. epistemic dichotomy.

Crucially, the derivational structure of the clause offers a suitable explanation of how this behaviour is structurally realized at LF. The characteristic of TP and vP phases as syntactically closed building blocks of the clause with mirrored structural patterns makes them the primary candidates for modals to scope over.

The scope relations in Czech modal structures are characterized by the way in which modality intervenes between phases of derivation. Czech modals are inserted into the semi-lexical head of vP, and then take the lower infinitival VP as a complement in order to attain the full argument structure of vP. The vP phase has a propositional character and is susceptible to becoming the scoping domain of the modal. Nevertheless, the modal has to move out of the head of the phase to attain its scope. This is possible only at LF, which allows the phase penetrability.

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<sup>200</sup> See chapter 7 for the relevant analysis.

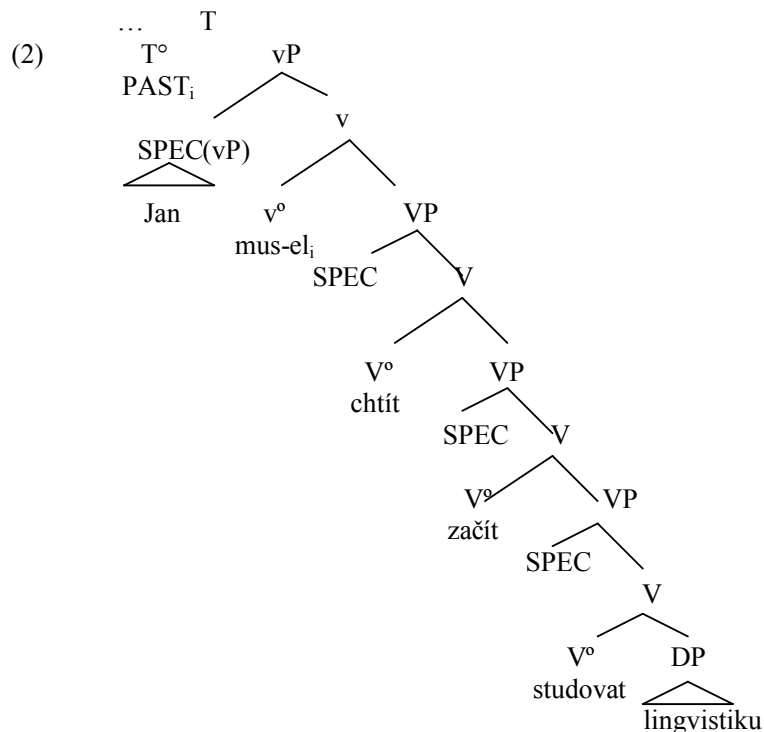


## General conclusion

This thesis has dealt principally with Czech verbal structures that contain a modal (or aspectual) verb followed by the infinitival complement, which can involve one or multiple infinitives. An example of the latter is (1) below:

- (1) Jan musel chtít začít studovat lingvistiku.  
 Jan mustPast3Sg wantInf beginInf studyInf linguisticsAcc  
 ‘Jan had to want to begin studying linguistics.’

The structure in (1) is both specific to Czech and challenging for our understanding of how syntactic structures based on the recent development of generative grammar (Chomsky 1995, 1998, 2000) can account for the verbal syntax. In the mainstream binary branching systems, (1) would have to be derived as (2) below, using a Cinque (1999)-style ‘super tree’ structure:



Chapter 6 argued that (2) is not just disadvantageous, but also cannot reflect the syntactic behaviour of the CVD. It involves multiple VPs with empty Spec positions. However, we have seen that there are no small-clauses or PRO categories in Czech CVDs that merit the ‘super tree’ in (2). Therefore the first (general) argument against (2) has been the argument of parsimony. There are, nevertheless, other arguments against having (2) as a representative of (1). Firstly, it has been shown that in order to maintain the process of  $\theta$ -role assignment in modal CVDs, the modal verb has to ‘cooperate’ with the lexical verb (in our case *studovat* ‘study’) in producing a joint  $\theta$ -grid. This is difficult to achieve if we maintain the binary branching in (2), since it creates excessive syntactic material between the modal *musel* ‘had to’ (responsible for a subject DP  $\theta$ -role assignment) and the lexical infinitive *studovat* ‘study’ (responsible for an object DP  $\theta$ -role assignment).

Secondly, (2) does not explain the combinatory restrictions within the CVD structure. All VPs observed in (2) have identical syntactic status, which is in direct contrast with what has been observed regarding the way CVDs are syntactically ‘constructed’. The situation is demonstrated by the following data:

- (3) a. Jan musí (TMV) začít (AV) chtít (OMV) studovat (LV) lingvistiku.  
 Jan must3SgPres beginINF wantINF studyINF linguisticsAcc  
 ‘Jan must begin to want to study linguistics.’
- b. \*Jan musí (TMV) studovat (LV) začít (AV) lingvistiku.  
 Jan must3SgPres studyINF beginINF linguisticsAcc  
 (‘Jan must study to begin linguistics.’)
- c. Jan chce (OMV) začít (AV) studovat (LV) lingvistiku.  
 Jan want3SgPres beginINF studyINF linguisticsAcc  
 ‘Jan wants to begin to study linguistics.’

- d. Jan začíná (AV) chtít (OMV) studovat (LV) lingvistiku.  
 Jan begin3SgPres wantINF studyINF linguisticsAcc  
 ‘Jan begins to want to study linguistics.’
- e. \*Jan začíná (AV) muset (TMV) chtít (OMV) studovat (LV) lingvistiku.  
 Jan begin3SGPres mustINF wantINF studyINF linguisticsAcc  
 (‘Jan begins to must to study linguistics.’)
- f. \*Jan chce (OMV) muset (TMV) studovat (LV) lingvistiku.  
 Jan want3SgPres mustINF studyINF linguisticsAcc  
 (‘Jan wants to must to study linguistics.’)

The data in (3) clearly show that there are rules of ordering verbal elements within the CVD structure. Significantly, (3) demonstrates combinations of the True Modal Verb (TMV) *muset* ‘must’, Optional Modal Verb (OMV) *chtít* ‘want’<sup>201</sup>, Aspectual Verb (AV) *začít* ‘begin’ and lexical verb (LV) *studovat* ‘study’. The grammaticality issues that were observed to occur in this situation have crucial consequences for the syntactic analysis of the CVD in Czech.

The TMV *muset* ‘must’ appeared to be able to occupy only the leftmost position in the CVD, ruling out (3e) and (3f). The OMV *chtít* ‘want’, on the other hand, could be placed anywhere in the structure prior to the LV *studovat* ‘study’, but not into the leftmost position if there was a TMV already present in the structure. In this respect, the behaviour of aspectual verbs in Czech CVDs (as seen in (3d) above) has proved to be identical to that of OMVs, but not TMVs. In contrast, the lexical

<sup>201</sup> The difference between TMVs and OMVs has been validated against the background of both syntax and semantics. We have seen in chapter 4 that there is syntactic evidence for the existence of two types of modals in Czech. The issue of nominalization, understood as a specific relation between V and N in the Lexicon, has played an important role: whilst OMVs can be nominalized (*chtít* ‘want’ (V) – *chtění* ‘want’ (N)), TMVs cannot. Other syntactic evidence is derivational, and relates directly to the combinatory properties discussed above. On the other hand, semantics offers a different kind of evidence. Section 4.4. shows that only TMVs, whilst unable to denote particular events, can attain epistemic interpretation. In contrast, OMVs have only root reading and are able to participate on event denotation of the CVD structure.

infinitive *studovat* ‘study’ could occur only in the rightmost position in the CVD structure and caused ungrammaticality if ‘moved’ to the left in (3b). This is because *studovat* has the role of an object  $\theta$ -role assigner: in order to assign its  $\theta$ -role, it has to have access to the object DP, which is *lingvistiku* ‘linguistics’ in (3).

A similar argument can be made for the leftmost position in the CVD, which has to be occupied by a finite verb that assigns a  $\theta$ -role to the subject DP ‘*Jan*’. The fact that this position becomes compulsory for TMVs was explained by the ability of TMVs to realize epistemic reading. The semantic analysis of the +EPISTEMIC feature in chapter 7 sheds more light on the observed fact that TMV-TMV and OMV-TMV multiple modal constructions are ungrammatical. It has been shown that since TMVs have +EPISTEMIC feature, they cannot occupy the lower, infinitival position in the CVD.

The locality constraints observed in (3)<sup>202</sup> are crucial to our understanding of the semi-lexical behaviour of specific members of the CVD in Czech. The research conducted in this thesis has shown that the CVD can be syntactically analysed more effectively if we consider its members to express diverse properties regarding the dichotomy between functional and lexical categories. It has been proposed that the ability of some verbal groups such as modals and aspectual verbs to become members of the verb cluster within the CVD structure is due to the fact that they are semi-lexical.

This thesis modifies Emonds’ (1985, 2000, 2001) theory of semi-lexicity, which advocates the closed class elements within the main groups of open class items

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<sup>202</sup> The combinatory properties of structures like (3) can be viewed as a result of two different processes. Firstly, it could be caused by simple ‘reordering’ of V elements without any effects on the meaning of the CVD structure. Secondly, it is a result of exchanges in structural positions. As Joe Emonds pointed out to me recently (personal communication), only the latter is relevant for our discussion.

(N, V, A, P). Semi-lexical (grammatical) heads are defined as those N, V, A and P that have no purely semantic features  $f$ , as is also the case with syntactic functional categories I, C, D. We have modified this assumption by emphasizing the partial lexical status of some semi-lexical items. Whilst Emonds does not exclude closed class Vs without the purely semantic feature  $f$  as an independent grammatical category,  $f$  remains a distinctive (polarity) feature in his system, distinguishing between the verbs *conduct* (+ $f$ ) and *do* (- $f$ ). In contrast, chapter 2 has advocated a hypothesis that acknowledges a partial presence of  $f$  in semi-lexical elements. It is articulated as follows:

- (4) a. A purely semantic feature  $f$  functions as a distinctive feature in the differentiation between fully functional and fully lexical items. It is a non-distinctive feature within the definition of semi-lexical items.
- b. Only functional closed class items (of category C, I, D etc.) completely lack purely semantic feature  $f$ .

Chapter 5 has shown that  $f$  has to be modified in order for the interpretation of the subcategorization frame of Czech modals and aspectual verbs as semi-lexical candidates to be convincing. In accordance with the different degrees of semi-lexical behaviour observed in (3) above, this approach leads to the ‘scale representation’ of semi-lexicity:

$$(5) F \quad \xleftarrow{\text{functional}} \quad \text{S-L} \quad \xrightarrow{\text{lexical}} \quad L$$

Given the data analysis, TMVs would be placed further left towards ‘functional’ than OMVs and AVs on the scale in (5). Furthermore, the more expanded

subcategorization frame of Czech aspectual verbs, observed in chapter 5, shows that they are ‘more lexical’ than OMVs. Whilst OMVs can only select infinitival complements, AVs can subcategorize infinitives, PPs and DPs.

Regarding Czech modal verbs, their semi-lexical status has been confirmed by the enumeration of the functional and lexical properties they share. Both TMVs and OMVs display strong lexical behaviour by having full morphological paradigms, by their ability to attain the negative prefix *ne*-<sup>203</sup> and their tendency to be left without their complements as a result of infinitival ellipsis.<sup>204</sup> On the other hand, they are similar to functional verbs of category I in their inability to take clausal complements<sup>205</sup> and lack of aspectual counterparts<sup>206</sup>. The array of semi-lexical properties identified in the group of Czech modal verbs suggests that they are probably closer to canonical lexical verbs rather than the functional categories on the semi-lexical scale.

The semi-lexical character of certain V participants in the CVD structure requires that we replace the ‘super tree’ structure in (2) by more relevant syntactic representation. Since the leftmost (finite) structural position in the CVD is both semi-lexical and crucial for the subject  $\theta$ -role assignment and agreement features realization, we have identified its status as syntactically ‘light v’ (Larson 1988, Hale & Keyser 1997, Chomsky 1995, 1998, 2001). According to this theory, TMV *muset*

<sup>203</sup> Both *Jan nesmí studovat lingvistiku* ‘Jan cannot study linguistics’ and *Jan smí nestudovat lingvistiku* ‘Jan can not study linguistics’ are grammatical.

<sup>204</sup> As demonstrated in *Jan musí (TMV) a chce (OMV) studovat lingvistiku* ‘Jan must and wants to study linguistics’. Interestingly enough, although both modals above are members of separate clauses as a result of infinitival ellipsis, the OMV-TMV order (*Jan chce a musí studovat lingvistiku* ‘Jan wants and has to study linguistics’) remains more questionable.

<sup>205</sup> Consider comparison of two verbs that can both select infinitival complements. The lexical verb *rozhodnout se* ‘decide’ enables additional clausal subcategorization (*Jan se rozhodl, že bude studovat lingvistiku* ‘Jan decided that he would study linguistics’) whereas the TMV *muset* ‘must’ does not (*\*Jan musel, že bude studovat lingvistiku* ‘Jan had to that he will study linguistics’).

<sup>206</sup> Whilst there is *dělat* (LV) ‘make’ – *dodělat* ‘finish making’, or *začít* (AV) ‘begin’ – *začínat* ‘begin repetitively’, there is no *muset* (TMV) ‘must’ – *\*domuset*, *\*musívat* etc.

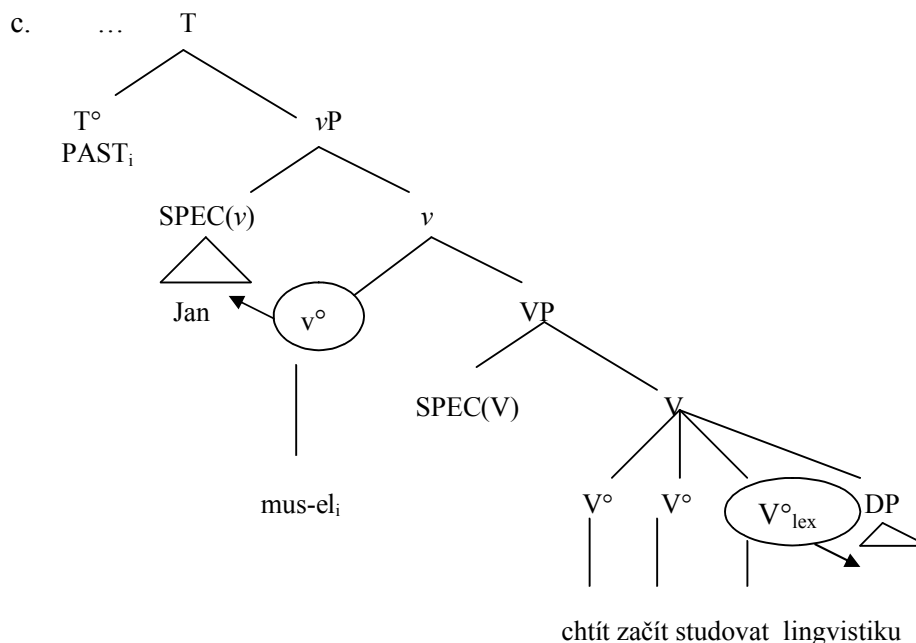
‘must’ is inserted into  $v^\circ$ , which projects  $vP$  – therefore, CVD structure is syntactically derived as  $vP$ .

The  $v^\circ$  head has been introduced into syntax as having purely functional attributes on the same level as  $T^\circ$  or  $C^\circ$ . In Chomsky’s minimalist framework,  $vP$  is recognized as a ‘phase’ at the level of syntactic derivation, and ‘interpretational unit’ at the level of Logical form (Chomsky 2001). In the system presented here,  $vP$  is understood to have semi-lexical status. However, it still allows the configurational interpretation of the  $\theta$ -role assignment similar to that of Chomsky (1995) and Hale & Keyser (1997), and as such provides the opportunity to explain the joint argument structure of Czech CVDs.

Another theoretical advantage of the  $vP$  projection is that it can account for the dichotomy between root and epistemic interpretation at LF. In Chomsky (1999), the two phases of derivation are CP and  $vP$ . The edge of  $vP$  becomes crucial for interpreting root modal readings, whereas the edge of CP hosts epistemic modality at LF (Butler 2003). The  $vP$  projection applied to the data in (1) appears as follows:

- (6) a. Jan musel (TMV) chtít (OMV) začít (AV) studovat (LV) lingvistiku.  
 Jan must3SgPast wantINF beginINF studyINF linguisticsAcc  
 ‘Jan had to want to begin studying linguistics.’

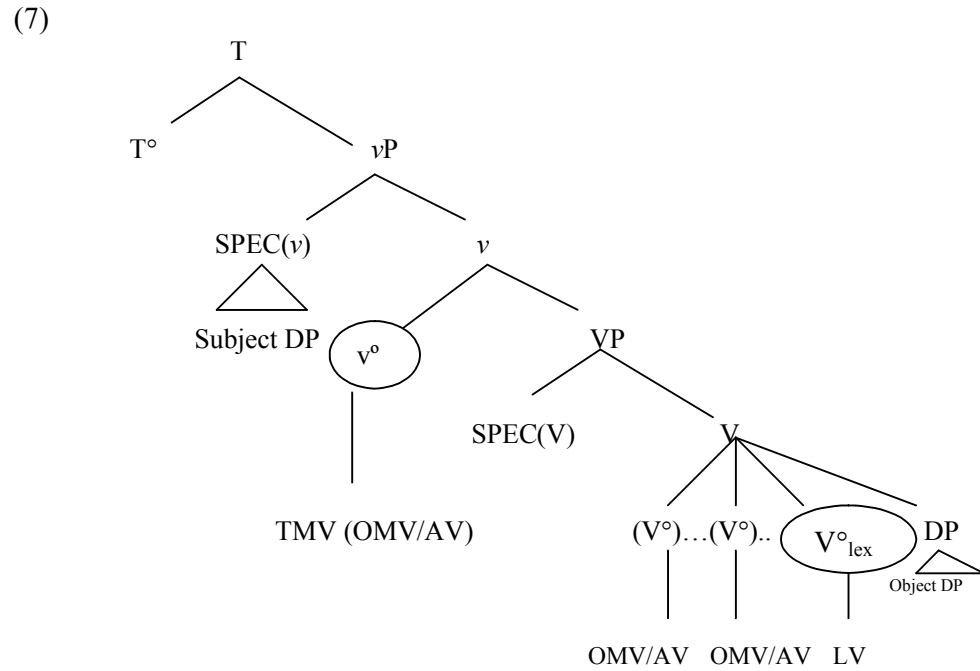
b.  ${}_{vP} [V^{\circ} {}_{vP} [\{ {}_{vc} V^{\circ} \dots V^{\circ} \dots \} V^{\circ}_{lex} DP]]$



The structural representation in (6) is a result of a ‘marriage’ between the vP hypothesis formulated on the basis of the minimalist program and the non-binary, flat structures advocated for V+V structures in Emonds (1999a and 1999b). The reasons for abandoning strictly binary branching have been listed above. The TMV *musel* ‘must’, inserted in  $v^{\circ}$ , has a flat VP complement involving an array of semi-lexical verbs followed by the lexical verb *studovat* ‘study’. In this case, the TMV agrees with the subject DP ‘*Jan*’ and assigns it a  $\theta$ -role, whereas the LV is responsible for the  $\theta$ -role and case assignment to the object DP *lingvistiku* ‘linguistics’. The result is a joint argument structure configured within the single vP projection, avoiding the difficulties encountered before.



The Czech data have shown that TMVs cannot be part of the VP complement, and that lexical infinitives have to be in the rightmost position of the flat VP complement. All other members of the VP in (6) can exchange their positions freely. In the light of these facts, the following final representation has been suggested:



(7) demonstrates that TMVs are only inserted in the head of vP and full lexical verbs can only occupy the position of the rightmost lexical head in the flat VP. OMVs and AVs can either assume the role of TMVs in  $v^{\circ}$ , or be part of the infinitival cluster in VP.

The derivation of modal CVDs as vP projections is in accordance with their syntactic status as V+V structures. The research conducted in this thesis has shown that Czech syntax allows V+V constructions only if the complement Vs are non-finite. The relevant data proved that modals are primary candidates for entering these structures because they can only select infinitival complements. The following unified subcategorization frame, specific to Czech modal verbs, is proposed:

(8)  $\text{muset}, V, +\text{MODAL}, +\text{mod}, +\_ [V, \text{INF}]$

The semi-lexical properties of both TMVs and OMVs are syntactically reflected in the subcategorization frame above. The cognitive syntactic feature  $+\text{MODAL}$  co-specifies the insertion of Czech modal verbs into the ‘light’  $v^o$ , which takes an infinitival VP as a complement. On the other hand,  $+\text{mod}$  is a modified purely semantic feature that our semi-lexical theory requires. As is mentioned above, modal lexical entries in Czech differ from other lexical entries by having a restricted semantic feature  $f^{\wedge}$ :

(9) If  $@$  is a modal, then

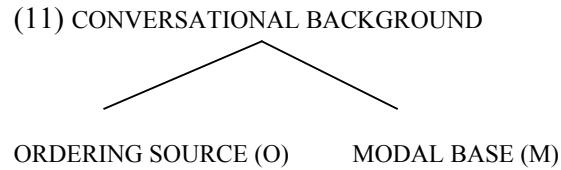
$@, X, F_i, f_i^{\wedge}, +\_ F_k$

In (9),  $f_i^{\wedge} (+\text{mod})$  is a purely semantic feature that captures the semi-lexical status of Czech modal verbs. It has an intermediate character between the cognitive syntactic feature  $F_i$  (it does not specify the derivation of the modal syntactic structure) and the purely semantic feature  $f$  (it does specify abstract modal relations at the level of LF). Semantically, it has the character of a function of modals to quantify over the set of possible worlds (modal base) in the sense of Kratzer’s (1981, 1991) modal semantics.

The formalization in (8) above enables the semi-lexical properties of both TMVs and OMVs to be reflected in their subcategorization frame. However, not all semi-lexical members of the CVD are identical in respect of subcategorization. For instance, aspectual verbs in Czech can have other than infinitival complements, and as such enter the CVD only secondarily. The difference is demonstrated in (10):

- (10) a. modal verb, +MODAL, +*mod*, +\_\_ [V, INF]  
 b. aspectual verb, +ASPECT, +*asp*, +\_\_ [V, INF]  
 +\_\_ [PP]  
 (+\_\_ [DP])

Whilst the first part of the thesis has dealt with the syntactic characteristics of the +MODAL feature and the subcategorization requirement of Czech modals reflected in their derivation, the second part has worked towards the semantic status of +*mod*. The most important premise throughout the semantic analysis has been that all modal verbs are propositional operators. The modal system, based on Kratzer (1981, 1991), is represented as follows:



The role of M in (11) is to determine the set of all relevant possible worlds quantified over by a modal operator, whereas O relates this set to the ‘ideal’ world (w), which may or may not be equivalent to the actual world.

The semantic analysis produced two principles participating in the modal meaning in (11). The first one was identified as a principle of epistemic v. root disambiguation: the epistemic modality expands the modal base M, whereas root modality reduces it. Crucially, it was demonstrated that the epistemic v. root ambiguity could be disambiguated by virtue of restrictions on the modal base:

(12) First principle

In  $w$  relative to Modal base  $M$  by Ordering source  $O$

*It must be that* [Jan je už v posteli ‘Jan is already in bed’]

$M_{ep} > M_{root}$

(+/- EPISTEMIC)

The first principle was further modified in chapter 10, which argues that the propositions epistemic and root modality quantify (scope over) are syntactically not the same: it is CP in the case of epistemic interpretation and vP in the case of the root reading of the modal. However, this does not affect introduction of the feature +/- EPISTEMIC.

The second principle was introduced to determine the differences between individual modal verbs in terms of their ability to express ‘necessity’. In this case, (13) has been argued for:

(13) Second principle

In  $w$  relative to Modal base  $M$  by Ordering source  $O$

a. *It must be that* [Jan je v posteli ‘Jan is in bed’]

$\Rightarrow w \cong M$

b. *It can be that* [Jan je v posteli ‘Jan is in bed’]

$\Rightarrow w \neq M$

(+/- NECESSITY)

The second semantic principle shows that all modals in Czech are either able to express necessity or lack this ability. The conclusive argument of the investigation was that the modal meaning (+*mod*) consists of the combination of the two principles identified above.

Importantly, there are a few issues that inevitably exceed the realistic scope of this thesis, but which are nevertheless relevant in terms of the aims of our research. Any modal system (and the Czech modal system is no exception) is extremely complex and involves many peripheral elements next to those at the centre of the syntactician's attention. For instance, we have not considered so called 'modal collocation' in Czech such as *dát se* 'give + Refl' and *nechat se* 'let +Refl', which can attain specific modal meaning that can be best expressed by the verbal complex *je možné* 'it is possible'. It is necessary to note when analyzing these structures that the above mentioned verbs are syntactic reflexive variants of lexical *dát* 'give' and *nechat* 'let', and that they can appear in many idiosyncratic contexts, including those that are not modal:

- (14) a. *Dá se / nechá se to udělat rychle.* (modal)  
           give Refl/ let Refl itAcc doInf quickly  
           'It is possible to do it quickly.'
- b. *Petr se dal ostříhat/ k armádě.* (non-modal)  
           Petr Refl givePast3Sg cutInf/ to army  
           'Petr got a haircut/ joined the army.'
- c. *Dal se/ nechal se napálit.* (modal?/non-modal?)  
           givePast3Sg Refl/ letPast3Sg Refl trickInf  
           'He let himself being tricked.'

The rich and often rather colloquial use of these structures means that they pose a challenge for their inclusion in our modal system. For now, these challenges have to be left for further research. Similarly, there are other, at first sight lexical verbs that

can perhaps be considered as candidates for OMVs. One of the stronger examples is the verb *zdráhat se* ‘hesitate’, which can be perceived as carrying a modal meaning in the same way that, for instance, *hodlat* ‘intend’ or *chtít* ‘want’ does. Indeed, the semantics seems to be very similar. However, *zdráhat se* is an inherent reflexive, which complicates the issue, and as a possible peripheral modal item seems to, if accepted, ‘open the door’ to a range of less and less clear candidates with infinitival complementation, such as *ostýchat se* ‘be shy’, *odvážit se* ‘dare’ etc. It appears that it is not straightforward to exhaustively delimitate all V elements of the modal system whilst keeping the system intact, and that this task would require further detailed attention.

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